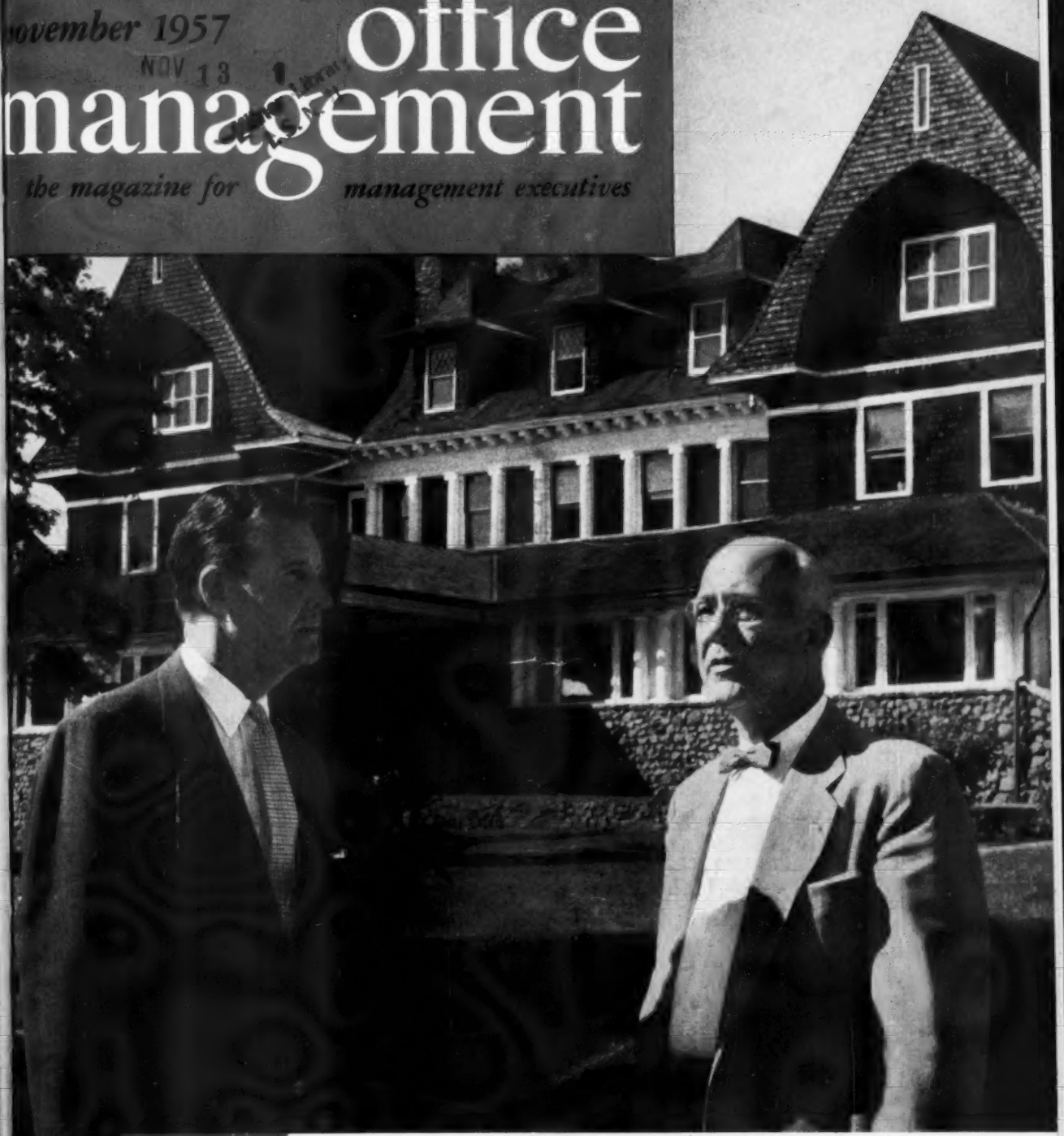
ovember 1957

NOV 13

office management

the magazine for management executives



AMA opens its Academy of Advanced Management

in this issue

- How to use the four main sources of workers successfully
- Conformism attacked at AMA Fall Personnel Conference
- NOMA holds special conference on automation in Hartford

ever see IBM stalk a public enemy?

Last night, police rushed the smudged, barely perceptible fingerprint of an unknown killer to state headquarters. There, an IBM "automatic detective" raced through thousands of fingerprint records and identified the suspect in less than ten minutes.

Guarding your life and property in this way is just one of an amazing variety of tasks assigned to IBM data processing machines by government offices everywhere. Flying through tons of paperwork, these machines speed vital services and help communities across the nation keep pace with the problems of growth.

Yes, every day, in uncounted ways, IBM helps add to the progress of community life . . . and the pleasure of daily living.

IN MANY WAYS AND PLACES IBM HELPS TAX DOLLARS DO MORE

By using an IBM computer to find economical road designs, state highway builders saved $2,000,000 on a new 20-mile stretch of superhighway.

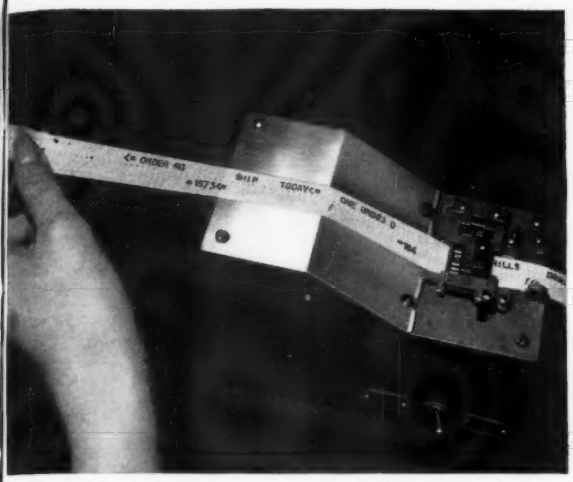
Processing accident reports for one state, IBM machines revealed road conditions chiefly responsible for fatalities. Result? New safety measures at key locations.

In federal agencies, IBM's giant 700-series computers swiftly handle a wide range of projects—from engineering for defense to Social Security accounting.

IBM DATA PROCESSING

DATA PROCESSING • ELECTRIC TYPEWRITERS • MILITARY PRODUCTS • TIME EQUIPMENT

For More Information From Advertisers Use Readers' Inquiry Coupon on Page 102



1. Teletypewriter request from DoALL outlet asks Des Plaines, Ill., warehouse for an item not in local stock.

2. Field order is processed in a matter of minutes at Des Plaines, then passed to warehouse in the same building.

3. Order is filled from the 15,000-item central stock DoALL maintains in Des Plaines for all sales stores.

4. Shipment is on its way within an average of two hours from the time the teletypewriter request was received.

Bell System service helps put 15,000 products on the shelves of every DoALL sales store

The DoALL Company's 37 sales stores can give customers fast delivery on any one of 15,000 cutting tool and gage items. They simply send a teletypewriter order to a central warehouse, and within two hours the item is on the way.

This Bell System private line service helps DoALL keep local inventories economically low, turnover high. It enables the company to streamline internal order handling . . . gives sales stores a daily status report on the stock situation.

• • • •

Modern communications may save days and dollars in your own distribution system. Just call your Bell Telephone Company business office. A representative will study your business, suggest specific ideas. No obligation, of course.

BELL TELEPHONE SYSTEM

PRIVATE LINE TELEPHONE • PRIVATE LINE TELETYPEWRITER • DATA TRANSMISSION SYSTEMS
CHANNELS FOR: REMOTE METERING AND CONTROL • TELEPHOTOGRAPH • CLOSED CIRCUIT TV

Your Number One Source for Executive Chairs...

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NOVEMBER 1957

Volume XVIII No. 11

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office management

Office Methods, Equipment, Personnel, and Purchasing
Sponsor of the "Office of the Year" Awards

in this issue:

How to use the four main sources of new workers successfully 25

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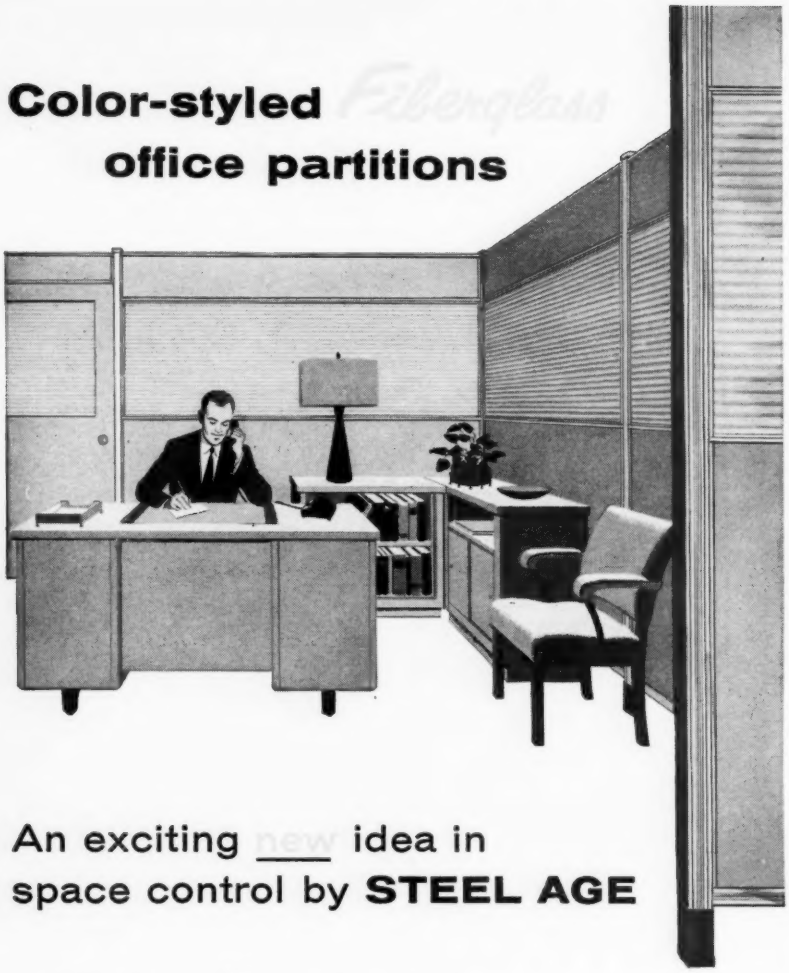
This month: Duplicating equipment 40

Milestone for management *(Editorial)* 104

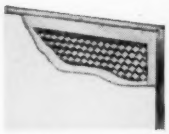
FORMAL dedication—and immediate "going into action"—of the first institution ever devoted to the practice of management marks a long step forward in the evolution of "management" as a scientific discipline, an organized entity of principles and skills. That step has been taken with the opening of the American Management Association's Academy of Advanced Management at Saranac Lake, N. Y. (See story, page 28.)

Subscription: $4 a year in United States and in possessions, Canada, Mexico and Cuba. Other countries $9 a year. Single copies 45c; Yearbook Issue $1. Copyright 1957 by Andrew Geyer-McAllister, Inc.; all rights reserved. Also publisher of Geyer's Dealer Topics, Who Makes It and Where, and The Gift and Art Buyer. Please give 60 days' notification of any change of your address. Re-entered as second class matter June 29, 1953, at the Post Office at New York, N. Y., under Act of March 3, 1879.

Color-styled office partitions



An exciting new idea in space control by STEEL AGE



STEEL AGE *Fiberglass* Office Partitions are completely *new, beautiful* and *practical!* They combine the *permanent* beauty of strong, lightweight fiberglass-and-honeycomb panels with a completely new concept in design and ease of erection.

Take your choice of seven striking decorator colors. They all blend perfectly with the anodized aluminum posts and fittings. And they'll *never* need painting! Then arrange them as your special space problems dictate—the possibilities are endless.

If your office or plant area (existing or on the drawing board) is in need of efficient, attractive space division, *see* this one completely new development in movable, prefabricated partitions. The whole exciting story of Steel Age Fiberglass Office Partitions is told in this new 16-page brochure. *Write for your copy today . . . and visit a Steel Age Dealer soon!*

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"The Quality Choice of Modern Offices"

STEEL AGE Dealers in Principal Cities throughout the Country

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Please send me a free copy of your new Steel Age Partition brochure.

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Business machine advice termed top executive need

Results of a five-year study undertaken by the National Office Management Association of the hundreds of inquiries it receives every year from its membership of 17,000 business executives, indicate that the biggest single need of office executives is advice on business machines of all kinds. This problem has ranked as the number one question in every year, with the exception of 1956. It is on top again in 1957, NOMA reports, tied with "physiological factors affecting office efficiency" and "salary and wage policies."

For the first time since 1953, the salary-wage policy question is among the leaders in number of inquiries. Last year's leader, physiological factors, includes such points as air conditioning, color, illumination, noise, temperature, ventilation, et al, and their influence on working efficiency. The importance of these problems is growing, the association continues. In 1955, the question ranked second in importance; in 1954 fourth.

Questions regarding budgeting and costs, education and filing systems were virtually tied for third place last year but have been far less numerous in 1957. For the five-year period, personnel practices and policies has ranked third in total inquiries, and job evaluation ranks fifth both in 1957 and for the entire period.

Among categories which apparently bothered businessmen least over the years are payroll methods and rates, testing methods, supervisory philosophies and such items as absenteeism, lateness and timekeeping.

In Short—

"Through-dialing" introduced into government switchboards

A new system of "through-dialing," introduced by General Services Administration in cooperation with the Chesapeake & Potomac Telephone Co., has been in operation for more than a month in nearly 40 Federal agencies in the Washington area. The system, in brief, speeds the flow of inter-departmental calls by enabling the person who places the call to dial straight through to the desired extension on switchboards equipped for through-

The weekly meeting of the executive committee started 15 minutes ago. But already the atmosphere is slightly sticky. The management's figures haven't exactly met with unanimous approval.

What do these figures show? A pretty discouraging profit picture. And it's gone on far too long. After all, business is great. But costs keep zooming . . . while retained earnings dwindle. The boss has got to find a way to plug those profit leaks.

Keysort punched-card controls could save this boss a lot of headaches! Keysort's fast, accurate reports would keep him abreast of all his operations . . . give him true modern management control . . . prevent money-losing situations *right in the office.*

Keysort punched cards – today speeded by the new Keysort Data Punch which simultaneously imprints and code-punches production or sales information – not only help top management plan in advance, they help *you* as well.

With a minimum clerical burden, you achieve greater reporting accuracy – flexibly, easily – because your office people summarize *direct* to reports. There's no transcribing; no costly, time-consuming intermediate steps. Result: management gets the accurate information it wants *on time.* And at remarkably low cost.

The nearby Royal McBee man has a presentation which will show you how it's done. Phone him, or write us.

McBEE KEYSORT®

Punched-card controls for any business

ROYAL McBEE Corporation, Port Chester, N. Y.

Offices in principal cities. In Canada: The McBee Company, Ltd., 179 Bartley Drive, Toronto 16.

ACME **ACTIVISIBLE** RECORD PACKS

make *any* drawer a visible record file

Lies flat in natural posting position

Simple to close—ready to return to file

Portable . . . can be carried in pocket

Save Time—Lift with a single simple motion and pack opens to an instantly useable, fully visible record file with all records, both front and back, immediately available for posting or reference. Every card is securely locked in place, cannot become lost or misfiled, yet it's only a matter of seconds to attach a new card or to remove one that is obsolete.

Save Space—Packs are filed vertically in trays, desk or file drawers, tubs or rotaries. Each pack of 25 record cards, 50 records, requires only ½" of space. Removable partition "reserves" proper filing space when pack is removed. Speeds refiling avoids misfiling.

For new Records . . . For Your Present Records
Ask the man from Acme to show you samples

ACME VISIBLE

District Offices and Representatives in Principal Cities

Acme Visible Records, Inc., Crozet, Virginia

☐ Send us more information on Activisible Record Packs.
☐ We are interested in Acme Visible Equipment for
_____ records.
kind of record

Company _____ Attention _____

Address _____

City _____ Zone _____ State _____

dialing. Presently, on such calls, the caller reaches a switchboard operator, who then plugs in the number and rings to complete the call. New code numbers have been assigned to certain departments and agencies in the new system.

Domore Chair introduces office furniture line

The Domore Chair Co., Elkhart, Ind., has acquired extensive production facilities to enable the firm to market a complete line of wood office furniture in addition to its line of posture chairs. According to company reports, office furniture will be produced in three categories: The 1200, 1400 and 1500 Series. Both the 1200 and 1400 series are flush top, with picture frame molding and double tapered legs added to the overall structure in the latter. The 1500 Series features a floating top to complement the contemporary appearance of the desks.

University professor elected dean of NSA Institute

Dr. Inez Ray Wells has been elected dean of the Institute for Certifying Secretaries, The National Secretaries Association (International), of which the Institute is a department, has announced. Chief function of the Institute is to supervise and develop the Certified Professional Secretary Examination, sponsored by the association and held annually in selected colleges and universities. Dr. Wells is professor of education at the College of Education, Ohio State University.

Remington Rand, Hauserman adopt co-op marketing plan

Adoption of a new marketing plan, designed to bring the E. F. Hauserman Co.'s new Divider Wall, low-level movable office partitions, into the Remington Rand "family circle" of business machines, office equipment and office furniture, has been announced. Under terms of the agreement, both companies will sell and service their own products, but will cooperate wherever possible in advertising and sales promotion. Hauserman will handle both sales and lifetime servicing of the movable walls, acting as a "partition arm" of the Remington Rand sales force. The plan will bring the technological know-how of Hauserman into play to back-up Remington Rand's efforts to merchandise "packaged" offices, reflect-

(*To page* 13)

A jammed switchboard is bad business.

No customer likes to wait on the phone. Furthermore, delays in completing *inside* calls hamstring your own organization. Happily, there's a practical cure for these troubles.

What you need is a P-A-X business telephone system—the privately-owned dial telephone system that is entirely independent of your present switchboard. P-A-X handles calls within your organization, frees the rented switchboard to handle outside calls swiftly and efficiently. Customers reach you quickly, the first time they call. Your own employees save precious time, because P-A-X provides immediate, private contact between persons in all departments. And, P-A-X soon pays for itself. There are no toll, mileage, or rental charges. You *own* your system.

Our booklet, "Dial Your Way," tells you more about the proven P-A-X method to improve communications, save important money. May we send you a copy? Write or call, Automatic Electric Company, Northlake, Illinois. FIllmore 5-7111.

P-A-X *business telephone systems*

AUTOMATIC ELECTRIC

A member of the General Telephone System
One of America's great communications systems

"You can do better than that, Miss Botts!"

But *can* she—really? The trouble could be in the typing supplies she has been using.

Inked ribbon, for instance. Your Roytype man can show you how much better and neater your letters can look when there's a Park Avenue Silk Ribbon in the typewriter.

You get a cleaner, sharper impression every time. And your typists won't have to waste time changing ribbons so often. Extra yardage takes care of that.

You can solve carbon problems with the new Park Lane Plastic Back Carbon Papers. Won't smudge or curl. Won't leave feed roll marks. Always make a sharp impression.

Depend on your Roytype man to help you get out the best-looking results with the lowest possible effort. He'll bring you the finest in ribbons and carbon papers and supplies for all kinds of office machines. Look him up in the classified telephone directory.

ROYTYPE® ... *carbon papers, ribbons... quality supplies for all business machines*

Products of Royal McBee Corporation

at Wilson Sporting Goods Co. . . .

Hauserman DIVIDER-WALL

provides practical privacy at a reasonable cost

In the home offices of Wilson Sporting Goods Co. at River Grove, near Chicago, this attractive HAUSERMAN Divider-Wall installation is helping to keep efficiency at a high level. For example . . .

1. Time-wasting interruptions and annoying distractions are at a minimum because Wilson's office employees work within semi-private units created by Divider-Wall topped with clear glass.

2. Each of the 16 departments is clearly defined and separated from others. This effectively draws together all employees who work on similar phases of the Wilson operation.

3. Because Divider-Wall is completely movable and re-usable, it provides Wilson management with a low-cost means of re-allocating departmental floor space quickly and easily whenever it becomes necessary.

While helping to boost employee efficiency, Divider-Wall holds down maintenance costs. Its lifetime baked-enamel finish, offered in a wide choice of pleasing colors, requires only washing . . . never repainting.

Your nearby HAUSERMAN representative can graphically demonstrate *all* of the benefits of using Divider-Wall to turn general office clutter into organized work spaces. Consult the Yellow Pages (under PARTITIONS) and call today.

MOVABLE HAUSERMAN INTERIORS

National Lifetime Service . . . An Exclusive Hauserman Dividend

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7125 Grant Avenue, Cleveland 5, Ohio
Hauserman of Canada Ltd.
91 Yonge St., Toronto, Ontario

Please send your free, full-color Divider-Wall booklet to:

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Company_____ Title _____

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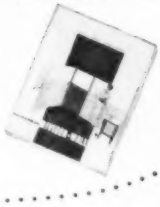
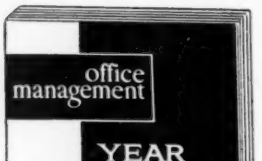
Free Booklet



Coming . . .



THE 1958 OFFICE MANAGEMENT YEARBOOK

Published as a bonus (13th) issue in March

THE ONLY ANNUAL DIRECTORY, REVIEW AND GUIDE TO THE EVER-GROWING OFFICE MARKET

OFFICE MANAGEMENT publishes a YEARBOOK as a separate bonus issue for its readers to give them the vast store of reference material to supplement the twelve monthly numbers of OFFICE MANAGEMENT with their current news and regular editorial features. The new 1958 issue of the YEARBOOK will bring into total focus the year's fast-moving trends in every phase of office administration and new equipment:

Operations Research • Automation and Integrated Data Processing • Systems Design, Forms Revision and Simplification • New Developments in Office Layout and Furnishings • Directory of Manufacturers of Office Furniture and Furnishings • Tools of the Office—Survey of Machine Developments • Directory of Manufacturers of Machines and Equipment • Personnel Practices • Catalogs, Booklets and Brochures • Office of the Year Awards • Review of Year's Calendar and Events

A WORD TO ADVERTISERS:

The Office Management YEARBOOK offers the advertiser a medium for making a catalog presentation of his entire line—to have a "salesman" constantly at the buyer's elbow every day throughout the year.

The combination of the 12 monthly issues of O.M. and the Office Management YEARBOOK is the economical, effective package for a full promotion job to the office market. Now while you are planning your schedules in OFFICE MANAGEMENT for the year ahead, be sure to include the O.M. YEARBOOK to round out your program. Send for complete data.

OFFICE MANAGEMENT YEARBOOK

Published by Office Management
A Geyer-McAllister Publication

212 Fifth Avenue **New York 10, N. Y.**

Boston Chicago San Francisco Los Angeles

(*Continued from page* 8)

ing a growing trend today toward lump sum bids on complete office interior projects, the announcement adds.

Floor covering firm introduces rent-lease policy

Commercial organizations are offered an opportunity to lease new carpeting on a three-year basis, with terms including 36 equal monthly payments for the rental, by the Wunda Weve Carpet Co., Greenville, S. C. One feature of the plan, which has been termed a "first" for the floor covering industry by President W. W. Pate, Sr., is availability of an option, whereby the carpet may be purchased for a total cost of one dollar upon termination of the lease. Cost is predicated on a cost-per-square-yard basis which varies according to the particular quality desired.

Companies gain tax advantages by leasing business cars

Federal income and other tax advantages are being gained by businesses which lease, rather than purchase, company cars, according to Commerce Clearing House, national reporting service on tax and business law. To gain these advantages, more companies are resorting to an equipment lease plan, under which cars are operated as though the company owned them, but title remains in the leasing firm's name. Firms requiring large fleets of automobiles find that the cost of leasing cars is a tax-deductible business expense. Purchase cost is usually a capital expense, subject only to deduction for depreciation. CCH warns, however, that if a rental contract includes an option-to-buy clause, the option price must be high enough, or the rental payments low enough, so that for tax purposes the rent will not be treated as payment on the purchase price.

Swingline, Oxford Paper expand facilities

Two leading manufacturing concerns recently acquired additional property in expanding their businesses. Swingline, Inc., manufacturers of staplers and various office supplies, has announced acquisition of the Ace Fastener Corp., Chicago, manufacturer and distributor of stationery supplies. Swingline management said the Ace plant will continue its regular manufacturing policies, and that each firm will act completely independently of

(*To page* 16)

Now!

a simple multiplying 10-key listing machine

Comptometer Comptograph "220M"

6 new features make figuring easier...

NEW Multiplication Key—electric short cut multiplication . . . even prints both factors and answer on two easy-to-read lines.

NEW High Speed—220 cycles per minute. Over 30% faster than most other 10-key listing machines.

NEW Dual-Purpose Lever—converts from multiplying to straight adding. 11-digit listing—13 totaling capacity.

NEW Color—smart "Autumn Tan." Easy on the eyes—blends with modern office decor.

NEW Variable Space Control—adjusts for single or double spacing.

NEW More Flexible Keyboard—accepts new figures faster.

Plus these wanted features—Exclusive Automatic Visi-Balance Window—Single Cycle Keys—Portability—Two Color Printing—Quiet Rotary Action—Streamlined Styling—Concealed Paper Roll.

COMPTOGRAPH "220M"

figures faster than you think

Add up the features: You'll know why there's greater speed and accuracy—lower-cost operation—with Comptometer Comptograph "220M." It's the world's finest all-electric 10-key listing machine. Prove it on your own work. FREE. Mail Coupon today.

Comptometer Corporation / BETTER PRODUCTS TO BETTER BUSINESS

New Comptometer Customatic—World's fastest way to figure . . . now faster than ever. Try it FREE on your own work. See for yourself.

Comptometer Commander—Insures accuracy in dictation. Lifetime Magnetic belt saves far more than machine costs. See for yourself.

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In Canada: Canadian Comptometer, Ltd.
501 Yonge Street, Toronto 5, Ontario

- ☐ Arrange free office trial for me on:
- ☐ Send me literature on:
- ☐ Comptometer Comptograph "220M"
- ☐ Comptometer Customatic
- ☐ Comptometer Commander

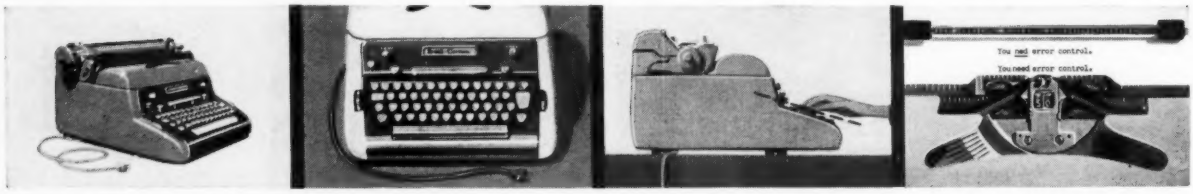
Name .....
Firm .....
Address .....
City ..... Zone ..... State .....

In the time it takes to smoke a cigarette...

LET US SHOW YOU

the world's fastest electric typewriter with the world's finest features!

Made for typists by typewriter experts, today's Smith-Corona Office Electric is the electric typewriter which carries on where others left off. Call your Smith-Corona representative for a short, dramatic demonstration of this marvelous business machine.



Sleek, clean, modern design, complementing faultless performance. Five lovely decorator colors. Exclusive Signal Light gives positive on-off indication.

All the operating controls are grouped efficiently within the keyboard area. Result: No waste motion, less chance for errors. Faster, easier, *better* typing.

The special keyboard slope and slightly slanted keys give unmatched typing comfort. Each key cushioned to prevent "flat" feeling and give livelier touch.

Exclusive Half Spacing — the easiest, simplest method of error control. It permits corrections without time-consuming (and very costly) total re-typing.

SMITH-CORONA ELECTRIC

best business connection you ever made

Discover new utility with "Y and E" Met-Ell-Wall partitions...

Let your imagination go with the help of these new movable partitions; you may discover new areas of valuable space, uncharted space throughout your office.

Areas that are now no more useful than a vacuum, might be made profitable. Areas that are jumbled, disorganized, might be made more efficient and pleasant to work in.

Save money at the same time. These new Y and E partitions actually cost only one-third as much as permanent walls and partitions.

An office, like the one above, can be put together in just a few hours with new Y and E Met-Ell-Wall partitions. Start with the 42-inch-high module and increase height to 54 inches or as much as 66 inches where you need it.

Better employee relations. All workers are more productive when given privacy rather than being islands of booming, buzzing, bustling confusion. Color improves their morale, too. You can get these Met-Ell-Wall partitions in Neutra-Tone Gray, Surf Green, or Driftwood Tan.

For all these reasons, you can think of Met-Ell-Wall partitions as an investment rather than an expense. They follow in the same long Y and E space-saving tradition which gave you Mod-U-Ell—the flexible desks that provide more work area in less space, and Pro-File* —the side-system file that takes one-third *less* floor space than conventional files.

Call your Y and E Dealer for more information and layout help, or send us a card.

**Patented*

YAWMAN AND ERBE MFG. CO.

1030 JAY STREET • ROCHESTER 3, N. Y.

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You can SEE where you're going

With Estey Open Shelf Filing! All your valuable records are in sight, prominently visible and accessible, when your File Department uses Open Shelf Filing by Estey! You can walk direct to the section, the guide and the file folder you want, faster more easily and more accurately!

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by
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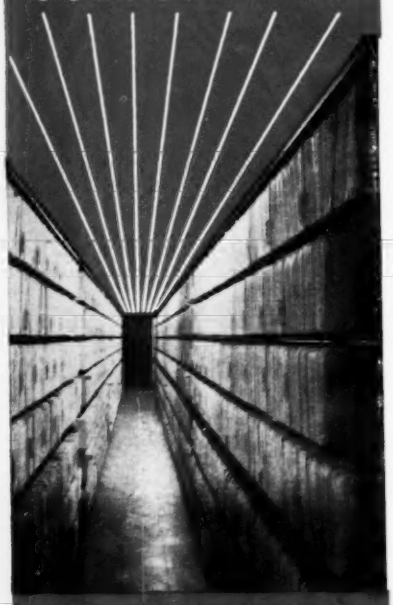

AND . . . Estey filing holds TWICE the records in the same floor space . . . meaning tremendous saving of valuable floor area!

Write for the new detailed brochure on Estey Open Shelf Filing . . . . Dept. S . . . .

ESTEY
CORPORATION
350 BROADWAY / NEW YORK 13, N. Y.

the other. The Oxford Paper Co., New York, has acquired the assets and assumed the liabilities of its wholly-owned subsidiary, Oxford Miami Paper Co., West Carrollton, Ohio, President William H. Chisholm has reported. Oxford Miami will be operated as a division of the parent company, he said.

Company-wide consolidation of paperwork initiated by Johns-Manville

With six new factories expected to be opened by early 1958, Johns-Manville Corp., industrial products and building materials manufacturer, has prepared for an increase in volume of manufacturing and sales by cutting "red tape" all along the line, the company reports. Creation of a new Administrative Services organization to lower operating costs, simplify and reduce work for clerical personnel, relieve certain personnel from individual computations and statistical work where possible, and speed communications has been announced by President A. R. Fisher. This action came as a result of administrative studies, underway since the beginning of the year, to find ways to offset the narrowing margin between sales and profits now faced by industry in general.

People in the News

John T. Boyd has been promoted to assistant manager of the Records Management Division, Stivers Office Service, Chicago, and *Mrs. Arnold Owens* promoted to the newly created position of office manager.

Richard D. Dotts has been elected treasurer of Pacific Mutual Life Insurance Co., Los Angeles.

Dickey Dyer has joined George Fry & Associates, management consulting firm, as resident manager of the firm's New York office.

John A. Hewlett has been elected treasurer of Cohu Electronics, Inc., San Diego, Calif.

Ellis Crawford Foster, industrial designer formerly with Executive Furniture Co., has joined Coins International, sales engineering organization in Tulsa, Okla., as design consultant.

H. Tyler Marcy has been named manager of International Business Machine Corp.'s Data Processing Division product development laboratory, Poughkeepsie, N. Y.

Beverly D. Taylor, formerly controller, has been appointed treasurer of Robertshaw-Fulton Controls Co., New York; *Walter H. Steffler,* formerly treasurer, will continue as secretary; *John C. C. Byrne* has been named controller; and *James A. Witt* has been appointed assistant secretary.

Books and Pamphlets

GUIDEBOOK TO A MODERN PERSONNEL PROGRAM, prepared and edited by the Personnel Division, Mutual Of New York. 60 pages. Available free of charge from the company, Department 13-6, 1740 Broadway, New York 19.

Designed to help overcome the inability of businessmen to keep abreast of all developments in the field of personnel administration, this guidebook serves as a "how-to" manual covering all important phases of the subject. It touches upon 19 different areas or activities which require estab-

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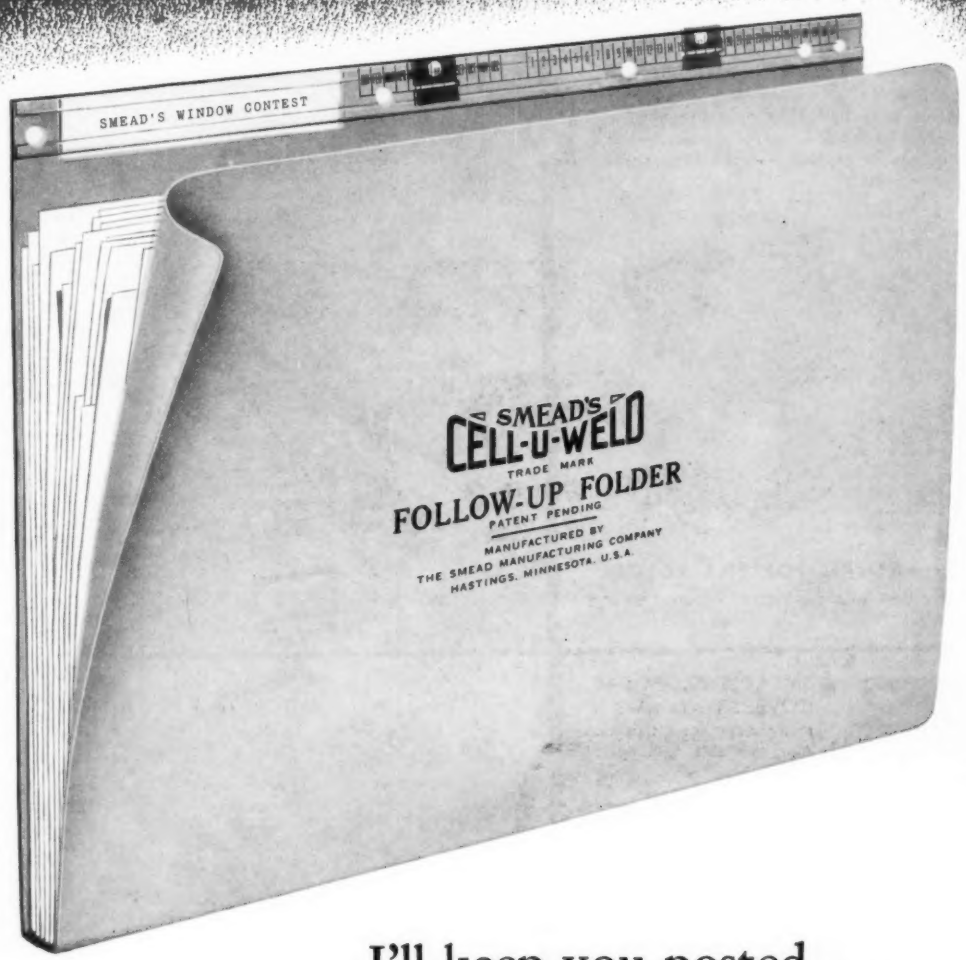
lishment of personnel policies. Organization of a sound program, policies on hiring, how to handle terminations, how to handle grievances, employee communications, what is a fair vacation policy, which holidays should be allowed, the question of salaries and various facets of insured employee benefit plans are considered. Also included is discussion on the use of performance ratings, job control, factors to consider in promotion and transfer, how to keep personnel records and employee training.

WORK SIMPLIFICATION, by Gerald Nadler. 292 pages. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36. $6.50.

Among highpoints in this new study of office efficiency, written by the head of the Department of Industrial Engineering at Washington University, St. Louis, are analysis of manual work methods to increase productivity, reduce fatigue, eliminate danger and conserve materials; descriptions of techniques, with illustrations of their application to a variety of types of work; organization of chapters to relate directly to each step in the "scientific approach" for solving problems, and inclusion of many recent advances. Emphasis is placed on the human being—operators, unions, management and the individual member of each group. Revised process and operation chart symbols are included.

HIGHER MANAGEMENT CONTROL, by T. G. Rose and Donald E. Farr. 256 pages with illustrations. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36. $6.50.

This book describes a method for assembling information concerning an industrial organization that will report reliably the financial health of that organization as a basis for top-level control decisions. It indicates how to select significant data from information available on business, operational, profit and loss, and financial activities of a company, and interlock them in a convenient control structure for the higher-echelon executive. The book covers the two steps in this method —the analysis to determine what facts are of basic importance in guiding a business, and establishment of a method to gather these facts and analyze them. A complete set of specimen forms for gathering and presenting the control data is shown.



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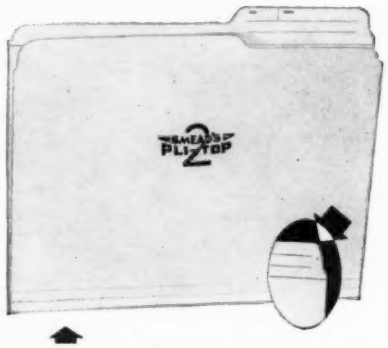

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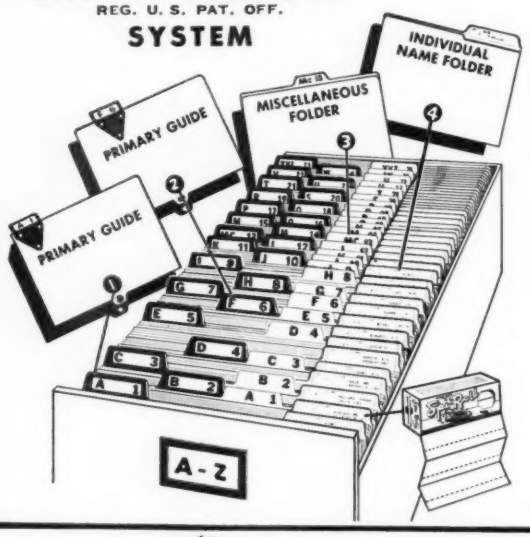

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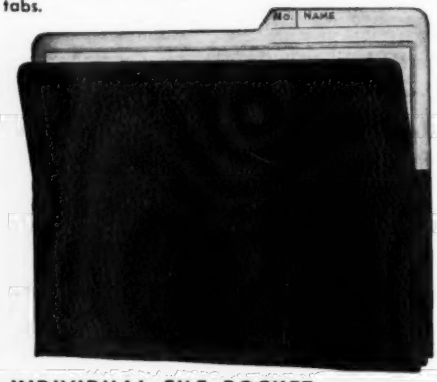

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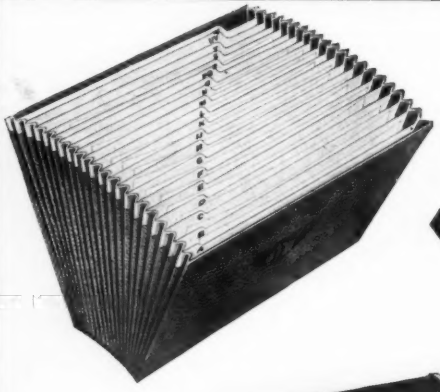

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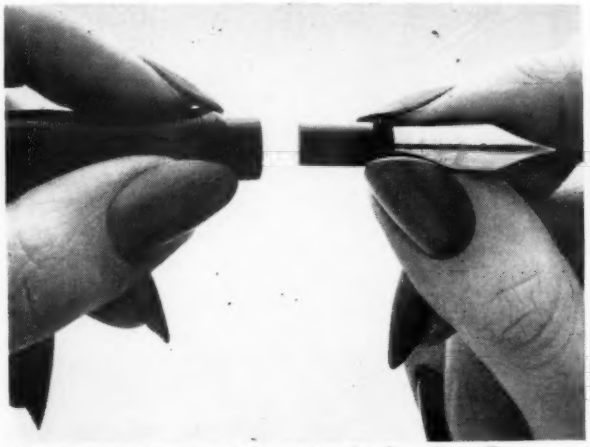

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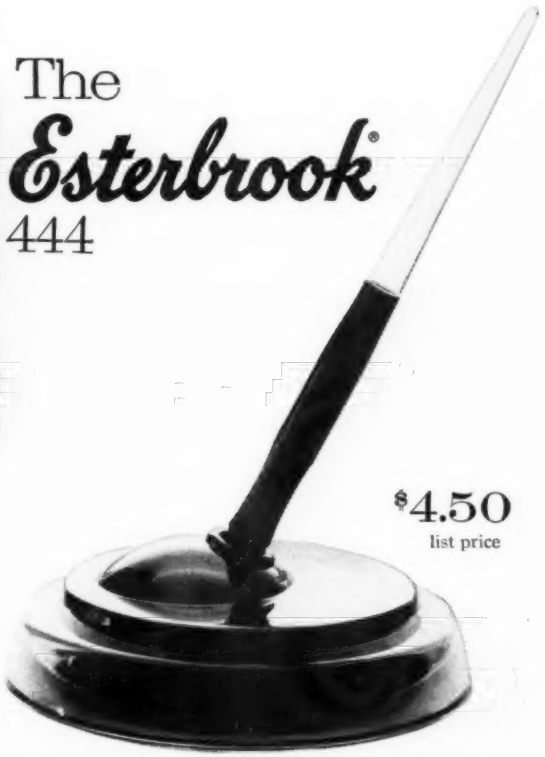

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1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Andrew Geyer-McAllister, Inc., (Corporate Name), 212 Fifth Avenue, New York 10, N. Y. Editor, Robert M. Smith, 212 Fifth Avenue, New York 10, N. Y. Managing Editor, Robert Beeman, 212 Fifth Avenue, New York 10, N. Y. Business manager, James E. Neary, Jr., 212 Fifth Avenue, New York 10, N. Y.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addressses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) Andrew Geyer-McAllister, Inc. (Corporate Name), 212 Fifth Avenue, New York 10, N. Y. Mary A. Geyer, 114 E. 84th Street, New York 28, N. Y. Donald McAllister, 212 Fifth Avenue, New York 10, N. Y. Bernard E. Neary, 1521 Zuleta Avenue, Coral Gables, Florida. James E. Neary, Jr., 22 Herbert Ave., White Plains, N. Y.

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Sworn to and subscribed before me this 24th day of September, 1957. William B. Wirtenberg, Notary Public, State of New York, No. 31—4312100. Qualified in New York County. Certificate filed with City Register, New York County. My commission expires March 30, 1959.

Coming Events

CIA Annual National Conference. White Sulphur Springs, W. Va., November 1-4.
Sponsor: Controllers Institute of America. *Place*: Greenbrier Hotel.

Fourth Institute on Electronics in Management. Washington, D. C., November 4-8.
Sponsor: The American University, School of Government and Public Administration. *Place*: Downtown Center, The American University.

3rd Electronic Business Systems Conference. San Diego, November 7-8.
Sponsor: Western Division, National Machine Accountants Association. *Place*: *U. S. Grant Hotel.*

NBFA 12th Annual Convention. Hollywood, Fla., November 10-13.
Sponsor: National Business Forms Associates. *Place*: Hollywood Beach Hotel

AMA Fall Insurance Conference. Chicago, November 13-15.
Sponsor: American Management Association. *Place*: Palmer House.

with the EDITORS

THE MONTH of October, 1957, has offered enough "good copy" on the world's news front to keep reporters and columnists, to say nothing of their readers, busy from early morning far into the night. No less than three major events, each related to the nation's domestic and foreign policy, took place in a lightning-like atmosphere, representative, perhaps, of the tempo of the current age.

FIRST, Russia's whirling dervish, sputnik by name, took its place in outer space, 'orbiting" around the earth at breath-taking speed, emitting a somehow plaintive 'beep" while sending back to its creators data on a portion of the universe which has fascinated man through all history. Second, there was the brilliantly successful goodwill tour of Elizabeth II, Prince Philip and entourage. Last of all, the nation which had been startled so by sputnik's unexpected ascension, had another series of anxious moments as the New York Stock Exchange ticker tape first showed a series of sickening drops, and then, indicated an even more spectacular comeback. SPUTNIK, a term of almost Shakespearian proportions, seems to have won a sort of grudging affection from us, even though its implications are both frightening and, to a people long convinced of its technological superiority over others, embarassing. The little moon, trailed by its cast-off rockets has of course already become a standard fixture in every TV comedian's repertory. Its wistful beep interrupts our radio programs, and has even lent itself to the successful launching of new products. A brand-new portable dictating machine, made by The SoundScriber Corp., was shown for the first time at a press preview the other day in New York, and each press kit contained a small plastic record, of the type cut by the new machine, that will, played back on either a standard record player, or the dictating unit, faithfully emit the Russian beep.

AS sputnik continued in its routine, the royal procession arrived in Jamestown, and began its triumphant progress north. Each of the cities touched gave its traditional welcome, and, of course, in New York, that always consists of impromptu confetti pouring from every office window on the route taken by the visitors. It poses an interesting question—where does all the paper come from? No doubt, the New York Telephone Co. is even now busily replacing hundreds of gutted directories in offices from the Battery to the Waldorf-Astoria, but certainly some other business papers suffered that day. Everything from customers' orders to shredded shipping invoices must have been included in that October snowstorm, and yet business doesn't seem to be too badily handicapped. What better argument could the advocates of "don't file it; throw it away" find? Perhaps this might offer a whole new approach to the problem of overloaded files, unnecessary information copies, and multitudinous memos. Not a parade, necessarily—the city authorities might have some strong opinions as to the wisdom of that, but some sort of weekly office festival in which all hands happily participate in a paper-tearing orgy.

THE EXCHANGE'S Big Board stole the end-of-the-month honors for drama, by first casting an ominous shadow over Wall St., that not even memories of the royal smile could dispel; and then, just when it looked as though the long slide were beginning to accelerate, coming through with a dramatic recovery. In a way, it was a capsule version of the whole month—the first fright, when things looked very bad—the breather, and then the recovery. The fright perhaps was healthy, under these circumstances: it shook us into an awareness that Americans still must work and still must compete—hard. The recovery gives us the chance to show that we recognize that fact.

Robert M Smith
Editor

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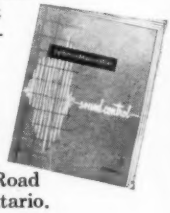

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How to use the four main sources of new workers successfully

Graduates, agency referrals, handicapped and middle-aged workers offer great potential in solving labor shortage

THE EVER-TROUBLESOME labor market, as tight as the proverbial Scotchman's fist, remains in 1957 one of the most serious problems facing executives whose offices, expanding with the nation's economy, desperately require additional workers. And, reliable sources have indicated, the supply of available applicants is, and will be, scarce.

At least four major sources, however, are open to companies which need to step up their personnel campaigns. As covered in the Personnel Recruiting Panel, held in Chicago under sponsorship of the Office Management Association of Chicago, these sources include the ranks of current graduates, agency referrals, the handicapped and the middle-aged worker. Although the panel primarily considered aspects of the Chicago employment picture, the discussion easily portrayed recruiting difficulties upsetting a host of cities throughout the nation. For employment problems, like influenza, are not confined to any specific segment in any specific city; moreover, the tranquilizers tested by one area well might apply in others as well.

Summarizing recently the highlights of the discussion was James J. Roche, Jr., former personnel director for Chicago's Palmer House, now director of personnel and training for the Hilton Hotels International, Inc., New York, a wholly-owned subsidiary of the Hilton Hotels Corp., whose topic at the panel was the handicapped worker. (Other panelists who appeared with Mr. Roche during the OMAC personnel clinic were William C. Reich, who discussed graduates, Maynard F. Beutler, agency referrals, and Kenneth E. Dougan, the middle-aged work force.)

Although graduates have played an important role in governing the labor situation, one "drawback" tends to postpone their entry into the ranks. A high percentage of high school graduates continues its education upon completion of secondary school; and although the specialized skills and training these persons will receive will have a favorable influence on the quality of their work in later years, employers cannot rely upon them to ease the current situation.

Reasons behind the high "drop-out" average of high school students—those who fail to remain in school—include lack of application, indifference to education, lack of ability, physical difficulties, financial problems and resistance to discipline. More important, many of these students are hired before their schooling is finished.

"Many employers would like to be fussy about hiring," Mr. Roche com-

The clerical shortage may be always with us, but a clear understanding of the various main labor sources helps recruitment

mented, "but on many occasions they simply need a body with two arms and ten fingers. It would be wise for these personnel men to hold off—to pick and choose, as it were—but quite often companies find themselves in a spot and cannot wait any longer for the 'right person' to apply."

The national figure on the number of drop-outs is about 50 per cent of all high school students. Some graduates, however, deliberately lie about future plans and accept full-time positions, only to resign in the Fall to attend college.

A general increase in the number of students taking commercial subjects is evident, at least in the Chicago area, Mr. Reich continued. Students in office practice have increased by 27 per cent in five years; by 11 per cent in typing; by 8 per cent in bookkeeping. A decrease of 2 per cent in sales training, and of 4 per cent in shorthand, was noted.

What is the best time to approach high school girls for stenographic jobs?

"General information may be given at high school 'Career Days,' which may occur in the student's junior or senior year," he said. "Or through cooperative work-study, which usually occurs at the beginning of the final semester; through information sent to the counselor, which should be rather early in the final semester; and through offers of Summer or part-time jobs.

"Also of value to both students and employers are Career Day programs, if properly organized. Employers become better acquainted with the school and its program, and they are frequently pleasantly surprised at the seriousness, maturity and potential of many students."

Certain areas in the United States are not faced with as critical a labor shortage as Chicago, Mr. Roche said, and the situation will be aggravated further by the need for 500,000 additional workers, to meet the expansion of industry in general and by the opening of the St. Lawrence Seaway, within the next five years.

Concerning the role of employment agencies in supplying much-needed office workers, Mr. Beutler, partner in the Jones Employment Agency, Chicago, stated that agencies do not give preference to large employers in the referral of qualified applicants. They might do so to a "regular" account, but size would not determine the referral.

"Some larger employers are easier to deal with, however," he said. "Their constant work with agencies gives them reason to provide complete advance details on their requisitions, especially as to whether they will pay the fee, the salary range, and so forth. Many of them further expedite handling their orders by mailing lists to agencies weekly."

Most agencies, according to Mr. Beutler, do screen applicants and offer sincere service, as is evinced by the tremendous growth of the industry in recent years. Some agencies, however, do regard quick profit as more important than long-range profit through service, and send applicants who are not qualified or suited for the job offered. On the other hand, a recent survey by an employer group indicated that agencies constituted a powerful force in recruiting specialized, professional-type office workers.

Suburban firms offer short-hour day

A wise method to obtain applicants in outlying, suburban areas is being followed by many firms, he said. This is by offering a short-hour day, which is particularly appealing to housewives, many of whom retain their former office skills but are unable to work full time.

In discussing unethical practices, engaged in by some agencies regarding fee payments, encouragement of applicants to lie about vital statistics, use of unskilled interviewers, et al, Mr. Beutler urged employers to "shop around" and "select an agency whose business and future are based on service and integrity and, obviously, stop dealing with any others."

Emphasizing that there exist no insurance risks or other liabilities involved in the employment of the physically handicapped, Mr. Roche discussed in detail the values an employer can gain from hiring the "handicapped-but-not-helpless" worker.

"The experience of companies who have employed the handicapped has been excellent," Mr. Roche said. "In most instances, the loss ratio is less than with so-called 'normal' people. One of the reasons may be that the handicapped knows he is, and conducts himself accordingly. The normal people are sometimes prone to expose themselves to unnecessary risks. Also, most employers of the handicapped report a much lower absentee record.

"If a company's policy calls for a probation period for all employees, the handicapped employee, of course, should be included. But I deny any inference that all industry has placed restrictions against the employment of the handicapped. The agency people tell me that anyone who can do a job is worth their consideration and best efforts."

"I do not believe that most of them expect to be treated differently from other employees," Mr. Roche continued. "As a matter of fact, I suspect that they would rather be treated as one of the gang. They have had enough of a problem with their handicap without people directly or indirectly calling it to their attention, as well as to the attention of others. If they have lived with their handicap for a long time, chances are that they will not be as self-conscious as someone who has been handicapped recently. Working around them is probably one of the worst things you could do, as it implies that they are somewhat less than useless and that a position has been created for them."

A frank evaluation of a handicapped person's abilities was recommended by Mr. Roche as the correct approach to the delicate task of releasing such a worker without being accused of demanding too much or being unfair.

"If, in your initial interview with this person before his employment, you clearly set forth his duties and responsibilities, there should be no great problem in convincing him that he has failed to meet the job requirements. Needless to say, he certainly should not be placed on a job he is physically incapable of performing.

"If, as in the case of an epileptic, the opinion of employer and medical department alike dictate that such a person should not be kept on the staff, he should be referred to a competent physician as, of recent years, tremendous advances in the use of drugs for epilepsy have had almost miraculous results. It is not, depending upon the severity, as hopeless as it once was

Unlike most handicapped workers, I feel certain that many concessions would have to be made to employ an epileptic so that there is the least possible exposure to serious accidents to himself and to others. If your need is that great for his services, you may be willing to make such concessions, but, I repeat, only upon a doctor's advice and, again, please be sure he fully understands the nature of the job."

Is the usual reaction of other employees to a deformed co-worker that of becoming "too helpful"?

"It would be extremely difficult for me to generalize about the reactions of others. Suffice it to say, however, that if your top management has firmly stated its policy about hiring the handicapped, such expression should take care of any unfriendly reactions. There will always be people who will be too helpful. Apart from management's expressed wish not to be too helpful, the biggest deterring factor will be the personality of the handicapped worker himself."

"Handicapped" concept changing

At one time, a person who wore corrective lenses was considered a liability, Mr. Roche concluded, as was a person who wore a hearing aid. "Today, corrective lenses and hearing aids are commonplace in our offices. Perhaps, too, the time will come when a crutch or an artificial limb will be equally acceptable. If a crutch or artificial limb is all that separates an otherwise capable worker from securing a job, and he is willing to buy it himself, he is worth consideration."

Kenneth E. Dougan, personnel and training director for Time, Inc., Chicago, considered the problem of the middle-aged worker and agreed that companies in the near future will be forced to relax restrictions they now may have regarding the hiring of older workers. Middle-aged groups generally have identical clerical skills to those of other groups, and frequently more with respect to typing and stenography. As to retraining, he said, usually much less is required than most employers would expect.

Mr. Dougan agreed that older workers should be required to pass the same types of physical examinations given to all other clerical employees—but with standards appropriate to age and job to be performed—and aptitude tests based on norms applied to younger workers. Frequently, he said, a rebuilding of confidence is the principal need of older workers.

"Sometimes," he continued, "the middle-aged are held back because of their personalities, but generally speaking we find them more anxious to

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The new Academy of Advanced Management is the former Trudeau Sanitarium

Conformism attacked at AMA Fall Personnel Conference

Office Management Conference also held late in October; Association's Academy of Advanced Management opened—

PRESENT TRENDS toward conformity, both on the national and the corporate level, can "pose a serious threat" to the United States, Melvin H. Baker, chairman of the board, National Gypsum Company, warned at the annual Fall P ersonnel Conference of the American Management Association, one of three recent major events on the AMA calendar.

The Personnel Conference, which was held in New York September 23-25, was succeeded by the opening of the organization's new Academy of Advanced Management, on the site of the old Trudeau Sanitarium, in Saranac Lake, N. Y., on September 30, and the association's annual fall Office Management Conference, in New York on October 23-25.

In his talk, "Management Looks at

Highlighting the conference was a "telephone interview" with playwright Rod Serling on the "Executive in Fiction."

Conformism" before the Personnel Conference, Mr. Baker conceded that a degree of conformity was necessary. "As social beings, we must follow society's standards to some degree," he declared. "Certainly conformity in dress of etiquette is desirable. But," he continued, "the influence of conformity can be pushed too deep, can hold sway too often. I believe our nation is approaching a depth of conformity which could change our economic standards. In some cases it has reached the point where social norms are actually determining fundamental issues and even morality."

If America does not resist this growing trend, if it mistakes "the weakness of conformity for the strength of cohesion," it will become a nation governed by the sterile dictates of public opinion polls, popularity contests, and perpetuation of the status quo," he declared.

The dangers of conformity are as real, if less serious, within an organization as they are on the national scene, Baker declared. Business today shows "the taint of conformity" in two vital areas.

"Business today pays excessive tribute to the demands of public opinion. In addition some businesses are in danger of suffocating individualism within their ranks through too much organization."

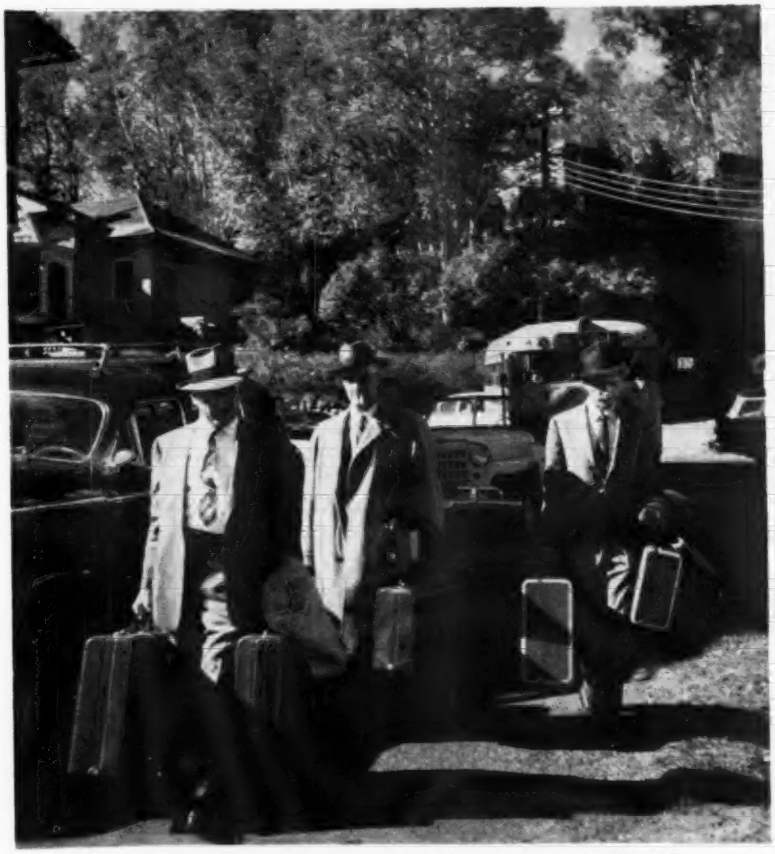
While not advocating a return to a "public be damned" philosophy, Baker said that "the public is always right" is equally erroneous.

Using his own company as an example, Baker described how, if it had followed the dictates of conformity with group opinion, it never could have achieved its present status.

"We began operations in 1925 when the building materials industry was over-produced," he declared. "Prevailing opinion at that time predicted that we had little chance of survival. Our new company would be competing with 25 established firms in a market already oversupplied. But we ignored the warnings, went ahead, and prospered.

"A few years later, we again ignored prevailing opinion and expanded despite 'go slow' sentiments prompted by a severe price war. In the grim days of the early thirties, we ignored the depression-born pessimism of public opinion and continued to expand. National Gypsum Company today is a leading producer of building materials

AMA's Lawrence A. Appley, left, and Sylvania's Don G. Mitchell examine the dedication plaque at opening day ceremonies at Saranac



Academy's first students arrived the day it was dedicated

President Appley, a former college instructor, discusses the basic principles of management with registrants at Saranac

because we ran counter to public opinion and listened instead to the dictates of our corporate conscience."

Within the corporation, acceptance of the "system" as it exists, is the most deadly symptom of business conformism, he warned.

"We must remember that today's junior executives will be tomorrow's top managers," he continued. "If businesses are guided in the future by a group of chief executives who have been trained to regard the system as perfect, those businesses will be run by men who are dedicated to maintaining the status quo.

"Today as never before," he concluded, "America needs men with vision. Men who can look to distant horizons. We will not find these men if our people glue their ears to the ground listening for the rumblings of public opinion or the dogmatic voice of an over-organized corporation."

Utilization of human skills and resources will be of increasing rather than decreasing importance in the age of the computer, according to Thomas Patton, president, Republic Steel Corp., another of the first day speakers at the Personnel Conference.

"In any foreseeable world," he declared, "people will be the key to progress." As technological change continues to accelerate, he went on, "intelligence and imagination will become more and more essential."

Quality upgrading essential

"Even if we consider that the increases in the quantity of people is one of our most serious contemporary problems, it is comforting to realize that the increase in the quality of people—their knowledge, and vision, skills and adaptability, can be our eventual salvation," he declared.

But bettering human resources imposes responsibilities on management, he went on. Management, he stated, should foster improvements in the educational system, clarifying the changing needs of business and industry for educators.

It should also look within its own companies to make the best possible uses of the resources of its workers, he said. In Republic's case, he continued, management has arrived at three general conclusions which may be adaptable by other companies:

That management, at every level, must learn to respect and use the differences that make men individuals as well as the similarities that enable men to understand each other and work together.

That one of management's greatest responsibilities is to watch for and nourish creativity wherever it appears, and, derived from this, the third conclusion: that flexibility in management personnel and organization is going to be of ever-increasing importance.

"As businesses grow in size and complexity, the urge toward regimentation is enticing," he said, "but we believe the urge should be resisted. We believe this so thoroughly at Republic that we have no formal organization chart and we strive continually to find new ways to increase the flexibility of inter-departmental relations."

The reverse of this picture at Republic is a double premise on which management bases its expectations of its workers: that the individual must assume full responsibility for his work, and that the prime responsibility of every worker, whatever his title or rank, is to see to it that his job is done in terms of the best interests of the company as a whole, rather than in terms of his individual department, division, or district.

Other speakers at the three-day conference discussed the possibilities of union-management cooperation in working for methods improvement; the need for less specialization, and more "top management thinking" among personnel and industrial relations executives; and the "Guide Chart-Profile" method of evaluating management jobs.

The latter talk, given by Edward N. Hay, president, Edward N. Hay & Associates, Inc., outlined a method by which representative management jobs are "profiled" in terms of the knowledge, judgment, and accountability required in them.

"The jobs are ranked according to the know-how requirements and point values are determined for the know-how, problem solving, and accountability scales," Hays reported. "Two or more evaluation scales are brought

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Specific examples and figures, changes of pace in either written or oral reports, and a final dress rehearsal will aid presentations—

How planning pays its way in successful presentations

By John Hockman
System and Procedures Officer, Steinberg's Ltd., Montreal

HAVE YOU EVER had to fight tooth and nail for support on a scheme that seemed as if it really ought to sell itself? — or been unable to go ahead for lack of an O. K. that just did not seem to be forthcoming?

Sometimes when this happens, it just seems like pure cussedness on the part of whoever is holding the thing up: but to accept this as explanation — and it is the one that comes most easily to hand — makes for a feeling of frustration that isn't good for one's health, let alone one's comfort and satisfaction in the job.

As one of those odd creatures, a methods man, the writer has perhaps had as good a share as anybody of ideas to get across: not, let us hasten to add in decent modesty, that he would for a second claim to originate more ideas: but, for his sins, anybody in that type of work does have to collect and sell ideas as a big part of the job. Consequently he has a good opportunity to think over some of the ones that didn't "sell" and try to work out why they didn't. The results should apply pretty well anywhere: hence this effort to set them down.

There seemed to be two main reasons. Either there were disadvantages that had been overlooked in working out the scheme — but for present purposes we can discount this angle — or, the advantages were not fully apparent to the person or people whose support was needed.

Here again, there seemed to be two main reasons. This "Either . . . . or . . . ." approach can be a little tricky: there is a risk of the argument sounding like the old one on "Why worry: either you'll live or die. If you die, it's no good worrying. If you live, either . . . . or . . . ." and so on, to absurdity. But perhaps we may be excused here: it's the approach used for computer programs too, and it would be nice if only this sort of argument could be as logical.

The weakness then, seemed to be either in approaching the matter from the wrong point of view, or in coming at it from the right angle, but with the wrong presentation.

As to point of view: given enough time, it would not be too hard to explain all the advantages of whatever proposal is in question, to the full. But who has enough time for any job these days? It is hard enough to keep abreast of all the things that just have to be done today, without taking any more than the bare minimum for considering things that could conceivably be deferred a day or two without a crisis. Unfortunately, proposals of new ideas very often fall into this last category — at least for the people whose consent is asked.

So the problem becomes one of accenting the highlights: without distorting the picture — that will almost certainly bring uncomfortable repercussions afterwards.

Here is where the difference in point of view takes on extreme importance. Management (with a capital M) does not look at the plan at all in the same way as the operating man who is going to run it. The operating man is in a position to appreciate such things as smoother operations at this point; better control at that; to see how it will eliminate practical difficulties in certain places, and so on.

Management would probably like to have time to be interested too: but it has one overall responsibility: profits. Profits in the most enlightened sense and with the full appreciation that a plan that increases costs in some areas may still be more beneficial in the long view, than cheeseparing at the expense of real efficiency. Still, however liberal the interpretation, the goal is still the same.

The moral of all this is, of course, "Money talks". A plan that presents its proposals in terms of cash to be invested to secure a definite return is almost sure to get a good hearing, — assuming, naturally, that the plan is a well-thought-out one and the return is good.

Every plan can have price tag

Almost any plan can, with care, be reduced to these terms, at least in office operations. If it will save time, it will save wages: either from letting total number of staff run down, or by permitting other work that would have involved extra cost. It may save equipment, supplies, or space. How much? What are they worth? Extra equipment, specialized staff or space may be needed. What will they cost? Making the changes will also involve expense. Better be sure it won't absorb all the savings for some time: it easily can.

The basic plan probably took many hours of hard work to prepare. It is a pity to risk having it shelved for want of the relatively small extra effort to estimate its cash value. An estimate may be all that is possible, but if the author doesn't make it, how can management? The author knows the details. Management doesn't — if it had to, it wouldn't have time to manage. If it doesn't get such money data, how can it evaluate the proposal in terms of the company's broad objectives — which, at the risk of being tedious, must in the last resort amount to proof . . . . need we say it?

One difficulty is that the benefits often include a number of intangibles — for example, the benefit of errors eliminated. These may be features of real and great importance, but sometimes they are intangible not because they cannot be measured, but because they are just too small to be worth measuring. However hard one tries to be objective, there is a terrible temptation to give this type of benefit a prominence—that one would realize, if one estimated, however roughly, its real value, that it does not merit. Management may very rightly be sceptical of benefits that

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Good ideas refused may make one feel like a voice in the wilderness, but—look at how they're presented!

Raymond D. Builter

Everett S. Calhoun

C. Fred Flannell

NOMA holds special conference on automation in Hartford

Automation will increase total number of jobs available rather than cause unemployment, Scheer declares, but personnel must be properly conditioned for innovations—

RECAPITULATION of milestones in the growth of automation, studies in present-day applications and an "avant-garde" glimpse into the potential of the automated equipment of tomorrow formed the nucleus of an "Automation Conference," conducted recently in Hartford, Conn., by the National Office Management Association. Also highlighting the two-day affair, held at the Hotel Statler on September 16 and 17, were investigations of integrated and electronic data processing, based upon actual company case histories, and a workshop session, all presented by 10 management representatives from various nationwide organizations.

Opening day speaker—Wilbert E. Scheer, personnel director of Blue Cross-Blue Shield, Chicago — stressed that, of all the factors which will determine the speed and direction of automation, "the most important is its effect upon people." He continued:

"The installation of automation machinery or electronic equipment will have a greater impact upon workers than it will upon methods . . . The fantastic predictions and wild promises of push-button factories and offices have, in general, been psychologically harmful to the attitude development of workers. This results in a fear of unemployment. This fear persists in many different circles."

Stating that this fear is unfounded, Mr. Scheer urged that workers look upon automation, not with fear, but with an "enlightened understanding," and he quoted these statistics to support this approach:

"Of 13 automated plants studied in a recent survey, 12 have higher employment than before the change.

"A survey shows that in 1940, we had in this country some 5,000,000 persons employed in clerical work; today the figure is 8 to 10 million."

Machine development will emancipate many workers from the drudgery of certain office routines, he said, but not only will automation *not* reduce job opportunities, it will be required to make possible future absorption of the available labor supply. Actually, he added, "automation should not cause any unemployment. What it may cause is some personnel displacement."

Automation should be welcomed, he emphasized, "for it is our best hope of providing the answer to many of the problems that are coming up, not the least of which are the labor shortage and the need for increasing productivity." Management, however, must recognize that automation opens the door to the introduction of many types of "social shock absorbers"—severance pay, dislocation pay, pension vesting, unemployment insurance, guaranteed wages.

"To minimize this problem, managements need only to remember three basic rules: (1) Acquire the confidence of people [and] don't proceed on any program unless, and until you can do so in a climate of mutual trust and respect. (2) Try to gain understanding of the workers; this means relating your planning, your program and your progress with them individually, not collectively—since no two workers are alike. (3) Keep people properly informed. Misinformation you may be guilty of; but you will not be guilty of something worse—lack of information."

Consequently, he concluded, "the new management era will emphasize

sympathetic understanding, sincerity and consideration of the human element in our businesses."

Following Mr. Scheer, R. A. Scudder, director of applications development, The Standard Register Co., Dayton, Ohio, entered into discussion of "The Power of Integrated Data Processing" by stating that "IDP is a simple concept—the name itself is the most complicating."

"But this concept is, without a doubt, the most powerful idea yet conceived to aid the American businessman in his constant struggle for more efficient office methods.

"Our offices are sick . . . and we know it. They are suffering from a disease—Business Formitis. The symptoms, however, are clear:

"Excessively high costs of running the office. (Statisticians tell us that in 1956, out of every dollar spent for goods and services, approximately 12½ cents were spent for clerical work.)

"A high error rate as information is transcribed from one report to another, thus building up costs if an excessive number of checkers is required, and making subsequent reports of little or no value if the errors are not caught and corrected.

"Slow, bogged-down flow of basic documents.

"Loss of customer goodwill.

"General confusion of many clerks, clashing hither and yon throughout the office and factory, making changes on orders.

"Inability to handle peak loads or, conversely, if you have the necessary personnel to handle these, then you may have the unnecessary expense of personnel during those periods when there are not too many documents to be processed.

"A general lack of awareness of the true condition of the business as of any given moment."

By using a blackboard, Mr. Scudder described and diagrammed punched tape, how codes are punched into tape, and how this medium applies to IDP. Commenting that IDP is "not a cure-all, not a panacea, which can be used as a magic wand," yet can preclude duplication of effort in business, he presented an example of a firm's sales order entry system—first, as operated under its former system (with much of the information typewritten and duplicated at various points), and secondly, by IDP, in which punched tape relieved duplication of routine.

He also indicated how IDP can allow a firm to maintain a perpetual (as opposed to periodic) inventory, since, as material is ordered and/or removed from stock, punched tape records will show what and how much a firm need refurnish to complete its inventory. Correlation of a typical office's loosely-related activities, however, cannot be achieved by new automated methods unless the complete office operation is analyzed and its systems and machines integrated, he warned.

Stating that "machines are ready" which will reduce costs, reduce errors, speed up processing of basic documents and speed up and increase accuracy of reports to management, Mr. Scudder urged management to partake of the "powerful medicine" of IDP to help cure office diseases.

"Don't be scared—there are no needles, no injections. Just roll up your sleeves and go to work!"

Medium systems foreseen

The third speaker, Charles G. Abbott, sketched a background of the development of electronics, emphasizing the point that an attempt is now underway by manufacturers to concentrate more fully on supplying a wider variety of medium-sized electronic machines and systems for the smaller office. But, he continued, no matter how startling in application these new machines may become, "no electronic data processor is as smart as its master.

"Man remains master of the machine; such catch-phrases as 'giant brain,' 'magic brain,' etc., have, if anything, been misleading."

To support his contention, Mr. Abbott, manager of the Administrative Services Dept., Arthur Andersen & Co., New York, exhibited a chart—"Man vs. Machine"—on which various abilities attributed to both were compared. The chart rated each as follows:

Response Time: 1/10 second (human); 1/1,000,000 second (machine).

Memory (internal): 10^{11} (human); 10^{7} (machine).

Flexibility: Good (human); poor (machine).

Reliability (on respective jobs): Poor (human); good (machine).

Good communication must be based on systems, SPA meeting told

Other speakers outline new approaches to work measurement, applications of operations research to systems—

MANAGEMENT'S major problem today is one of communications and it must communicate through systems and procedures, Joseph Pelej, partner, Price, Waterhouse & Co., New York, told the opening day audience at the 1957 International Systems Meeting, held by the Systems and Procedures Association of America, in Los Angeles, October 7-9.

More than 1000 systems engineers and executives, accountants, controllers, industrial engineers, and office managers attended the three-day program which encompassed 86 general sessions, seminars, industry groups, and special sessions.

Three new special features introduced this year were the Systems Panorama, the Systems Managers' Seminar, and the Systems Spectacular. The Systems Panorama was designed to give a "basic systems education" to beginners, new to the systems field, and people with systems responsibilities as secondary duties. The Systems Managers' Seminar was a special half-day meeting, while Systems Spectacular was a film dramatizing the use of systems and procedures in law enforcement, which was made in cooperation with the Los Angeles Police Department.

Appropriately enough at such a meeting of specialists, an electronic computer was used to help manage the mechanics of the meeting. An IBM 650 was assigned the job of keeping track of all conference registrants, recording the particular meetings which each registrant wished to attend, giving questioners exact times and places for any meeting, and computing conference statistics for the managing group.

Discussing management's increasing dependence on good systems planning to maintain its vital communications pattern, Mr. Pelej said that all management functions depend on data, and that getting the right data to the right people at the right time is the primary responsibility of the communications pattern in a company.

"In a basic sense," he declared, "communication is control. That is what makes communication of the most vital importance in the new extension of management responsibilities."

Communication in the traditional sense can be divided into three main categories, he went on: oral communications, communication through conferences, and communication through written instruments. Oral communication is becoming less and less important as businesses grow larger, and

Leslie H. Matthies

F. Walton Wanner

Lloyd C. Hallamore

more technical; communication through conference is still important, but communication by written instruments is by far the most important channel, he continued.

"Properly designed reports containing correct, clearly portrayed information can form the basis for good planning, for good control over performance and for good evaluation of results and therefore of future plans," he declared.

"The usefulness of reports in communication underlies the modern concept of accounting frequently referred to as management accounting. It has to do with methods to enable management to plan and coordinate operations for future periods, and to determine (1) the extent to which established plans and objectives are being met, (2) the efficiency of performance and (3) responsibility for performance in relation to established goals."

But the complexity and pace of today's business means that communication is becoming a crushing job, he said, calling for the best efforts of systems experts in devising new and improved communication and control procedures.

"Systems provide the new tools both for collecting and interpreting data with a speed hitherto undreamed of and also of working out means of transmitting it in time to be of value," he went on. "In doing so, systems men have the use of tools and techniques never before available. Two of the most intriguing are electronic data processing and operations research."

Data processing has changed in two important respects since the advent of electronic computers, he said. Processing of data becomes directly integrated with the creation of the original source document, and the capacity to make any number of logical decisions can be built directly into the system.

"With the new tool of operations research we can eliminate much or all of the guesswork in developing information on which vital management control decisions were often based," he continued. "The trend toward increased mechanization of choice-making will mean greater standardization of source data and transaction processing, and more delegation of responsibility with an accompanying 'right to err' at lower levels of responsibility."

Is work measurement misused?

Work measurement techniques are being misused in many companies to exploit workers by forcing too high a standard of production, Ben S. Graham, director, Methods Research, The Standard Register Co., charged in a talk on "Measuring Clerical Performance" on Tuesday, the second day of the conference.

"There are legitimate reasons for measuring work," he continued. "However, just measuring work is not enough. We must be certain that the work we are measuring is worth doing. When people, working in a climate of mutual understanding and respect between management and workers, feel their work is worthwhile, they would rather do a good job than a poor one. They want to know what constitutes a fair day's work, and then they will try to beat it.

"Measuring work to plan and schedule work, determine manpower and equipment needs, balance work loads, aid a person to be more effective, evaluate performance are all sound objectives. Another is to evaluate various methods of doing the same work. Particularly in highly repetitive short cycle operations, standard times may aid in synthesizing a more effective method."

In discussing various methods of measuring clerical work, Mr. Graham assailed the "historical" approach, in which standards are created on the basis of the average work output of the past.

"The major weakness of this system," he declared, "is that there is no relationship between what was done and what should have been done. The historical approach might almost be designated the 'hysterical approach.'"

Basic to any type of work measurement is the time-production relationship, he said, but other factors must be included to give a true and reasonable standard.

"Regardless of the mechanical device used for recording time, the observer must accumulate data on a sample of the work adequate to include all the interruptions and variables that may be involved, whether due to material, equipment, or extraneous elements," he said. "Before the actual study begins, the observers must view enough cycles to determine convenient starting and finishing points for the cycle, and convenient definite breaks in the motion pattern of the cycle which are spaced a timetable interval apart.

"A new approach founded on old fundamentals has been developed which holds promise of providing for a much broader application of work measurement to the clerical and general paperwork field. 'Ratio Delay' as a technique was developed in the textile

industry in England. It is based on the principle that if through unbiased observations you record an adequate sample of an activity, you can determine the relative times involved in the various interruptions or delays as well as productive activity. Both the sampling theory and the theory of probability on which the deductions are based, are new to manufacturing although they have been used and developed to a high degree of efficiency for generations in the insurance business."

Another approach that may prove valuable is a combination of sampling techniques and historical data, he said, but very accurate judgment is called for in measuring work in this fashion.

"With the exception of the purely historical approach, every technique has been used successfully," he concluded. "The determining factor seems to be the attitude of management in attempting to measure work. When their attitude and motives are correct, they will not attempt to apply a technique to that type of work for which it is not suitable. There will be understanding on the part of the workers as to the objectives to be accomplished and the benefits will accrue to both workers and management. . . . If work measurement is well sold, and results are favorable, those not included are frequently unhappy because they don't have a measuring rod to determine their effectiveness."

Operations research technique applied to system planning and design can often improve the final system evolved, and make it less expensive, Ned Chapin, systems analyst, Stanford Research Institute, asserted in another Tuesday speech.

Defining systems analysis as the devising of methods of combining labor services, material services, and equipment services to accomplish data processing in business, Chapin outlined the "seven major steps" in systems work:

"The first of the seven major elements is to define the objectives. . . . Usually the analyst is attempting to find better ways of accomplishing data processing in business.

"The second element in systems design is to obtain cooperation. This means to establish communication with the employees in the company whose job will be directly and indirectly affected by the systems analyst's work . . . the analyst should obtain the cooperation of all in the company who initiate requests to instigate, revise, or abolish the use of any form.

Victor H. Roman (right), receives the Systems Man of the Year Award from the Messrs. Wanner (center) and Matthies

"The third element in systems design is to gather data. The data that the systems analyst gathers must be the information that will enable him to determine what should be the characteristics and attributes of the system he devises.

"The fourth element in systems analysis is to analyze the data that have been gathered . . . this analysis takes two forms. First, the analyst usually organizes the data he has gathered by preparing a written procedure describing the present system. . . . Secondly, the analyst usually attempts to identify the strengths and weaknesses of the present system with those particular parts of the procedure that give rise to them. . . ."

"The fifth element in systems analysis is to synthesize a new system. This synthesis work involves evaluating the work done in the analysis stage and combining it with good, bright ideas about how the objective can be met by more economical use of labor, material and machine services.

"The sixth element in systems analysis is to install the newly devised system. This involves the write-up of the new procedure, the preparation and acquisition of the various forms, the acquisition of equipment and supplies of the proper tapes and the training of personnel.

"The seventh element in systems analysis is to follow up the installed new business system. This follow-up operation is to determine whether or not the new business system is doing what was expected of it."

Outlining how operations research techniques could be used to improve these seven steps, Chapin said there were eight major elements in operations research work:

"The first element in operations research is to define the objective.

"The second element in operations research is to obtain cooperation. This is the same establishment of communication as was noted for the second element in systems analysis, but in practice in operations research there is slightly greater stress upon management.

"The third element in operations research is to gather data. Here again, this is much the same as the third element of systems analysis. But typically a more extensive data gathering job is done in operations research than is done in systems analysis. Frequently this collection of information is accomplished by the use of more technical types of techniques than is the case in systems analysis.

"The fourth element in operations research is to build a model. This construction of a model really is the pro-

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New Friden unit permits 6, 7, or 8-channel tape to be used for transmission on existing wire services

DEVELOPMENT by its Data Processing Division of the 705-III, "one of the most powerful electronic systems on the market for the processing of business data," has been announced by International Business Machines Corp. The new office machine is the latest addition to the IBM 700-series of large-scale electronic data processing systems.

Among the outstanding features of the new system, IBM reports, is a completely-transistorized magnetic tape unit with an input-output rate fast enough to read or write the equivalent of a full-length novel once every 15 seconds. This ultra-high-speed tape unit, the IBM 729 Model 3, can read or write business information at a rate of 60,000 characters a second, automatically checking the information for validity and readability at the same time. By increasing tape density, the announcement adds, the Model 3 is able to store up to three times as much information on each tape reel.

The system also utilizes the new 767 Data Synchronizer, which controls magnetic tape input and output so that the 705-III can read problem data, compute and write answers simultaneously. Calculating time on many applications, the company estimates, will be reduced by as much as 40 per cent. Using the Model 3 tape unit, the machine will be particularly useful in low activity, high volume file maintenance applications, such as inventory control, and life insurance.

It is equipped with a 40,000-position magnetic core memory, which can be enlarged to 80,000 positions by use of an additional core storage unit. This increased capacity enables the system to process many applications directly in core memory without the necessity to utilize other means of storage.

The new system will rent for $35,000 a month and up, or sell for $1,925,000 and up, depending on the amount of auxiliary equipment used, IBM reports.

New multi-tape unit offered

Friden Calculating Machine Co., Inc., has announced introduction of a new machine for sending, receiving and checking data encoded in more than five channels of punched paper tape over existing wire services.

Designated as the Friden Teledata, the new machine is capable of transmitting and receiving 5-, 6-, 7- and 8-channel tape. Two or more units are stationed at different locations, providing a means for immediate communications. The company states that the Teledata does away with former limitations in wire transmitting infor-

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Friden's new Teledata, recently introduced by the calculating machine manufacturing company, is designed to accommodate transmission and receiving of 5-, 6-, 7- and 8-channel tape, thereby freeing companies from former limitations in wire transmitting informaton used in integrated data processing systems.

Five ways of attacking paperwork burden stressed at New York meeting

Units to "police" paperwork, drastic cutting of information copies, strict records retention programs urged—

WITH "Paperwork — Liability or Asset?" as its theme, the fourth annual Conference on Records Management, held in New York September 20, covered five key phases of the processing of paper—from the creation of records to the personnel needed to man the processing pipeline.

Sponsored by the National Records Management Council, the all-day meeting was attended by some 300 government and industrial executives, most of whom were paperwork control administrators.

The cost of processing a form is approximately 15 to 20 times greater than the printing cost, William L. Crunk, general supervisor of sales offices for Reynolds Metal Co., told the audience, so that uncontrolled forms, or poorly designed forms can represent very heavy expenses within a business. Discussing the control of paperwork from its inception throughout the processing cycle, he listed eleven methods for cutting the cost of preparing, handling and storing forms. He particularly stressed decreasing processing time by orderly arrangement of information, consolidation of forms, and the benefits of establishing a central control point through which all proposed new forms must pass before approval.

In citing points to be remembered in preparing effective reports, Mr. Crunk described as one major source of unnecessary paperwork the "copy distributor."

"When I receive a letter which indicates that copies have been sent to five or six people," he continued, "I deliberately reply without distributing copies. I have never had a request to furnish a copy because, as I surmised, the copies weren't needed in the first place. Copy distributors are of two types. The first is the 'line of authority' type. He sees to it that your boss, your boss' boss, his boss, his boss' boss, and usually several vice presidents get copies. The second, I call the interdivision type. He may not distribute as many copies, but he always manages to send one to an executive in another division. Invariably this results in a request for copies of previous copies or an explanation of what it is all about."

Functions of a central staff unit created in the Port of New York Authority to "police" paperwork were reviewed by Harvey Sherman, manager of organization and procedures for the Authority. Working mainly through surveys, controls, and "operator participation" programs, the staff group has proved highly effective in smoothing and simplifying paperwork, he reported.

"In reviewing the need for a new position," Mr. Sherman continued, "we analyze the procedures used in the unit to see whether or not they can be simplified or eliminated to obviate the necessity for the new position. In this way, we have an automatic review of all growing areas. Our principle is: in the face of increased workload, eliminate or simplify first. Add staff only as a last resort."

Space savings of 23 per cent, and the elimination of $26,000 worth of file cabinets were two results of a records management program designed for the Stromberg-Carlson Co. by the National Records Management Council, Daniel G. Schuman, vice president and controller for Stromberg-Carlson, reported.

Preceding creation of the new program, NRMC personnel surveyed Stromberg-Carlson's "difficult and time consuming" records situation, he stated. A workable records retention schedule was devised by NRMC specialists and Stromberg-Carlson personnel working together. First major areas of operation were determined, and then the vital functions within each area.

"In the manufacturing phase, for example, we concluded these functions were vital: researching, equipping, producing, and testing," he said. "It was then necessary to determine which doc-

(*To page 76*)

A Monthly Feature

Tools of the Office

Copying and Duplicating Equipment

By Robert Beeman

THERE IS no such thing as a perfect duplicating machine. Perhaps this is one of the reasons why office executives seem so eager to hear about new ones—quite apart, that is, from the obvious fact that they have learned to look to duplicating equipment to solve many of their paperwork problems.

Yet, even though no one machine can do everything, there is no doubt that, properly chosen, duplicating and copying equipment can do much to ease the office work load. It is much faster—and much less expensive—to run a letter through a copying machine than to retype it. It is much faster—and again much less expensive—to run off a hundred copies on a duplicator than to make that many carbon copies in a series of typings.

Duplicators and copying machines have been fitted into all kinds of office systems. Some duplicators are sold specifically for "systems" work in which they prepare sets of related forms, copying repetitive information from one to the next much faster than it could be posted by hand. They accomplish far more than merely making extra copies of notices for general distribution, or than providing personal copies of incoming mail for an executive who wants to keep track of a particular undertaking.

They are being used in accounting, sales, inventory control, and practically any other kind of office function that can be imagined.

Yet, there is no one machine that is perfect. This department lists thirteen different processes, each of which is distinct from all the others. Some offer speed, some are particularly economical. Furthermore, some cannot copy two-sided material, and some cannot pick up certain colors. Some are satisfactory when only a few copies are needed but are clumsy or expensive when multiple copies are required. Some can produce multiple copies at high speed but cannot be used to reproduce certain kinds of materials.

In short, each process has its strong and its weak points. In order to select equipment for a given office it is necessary to study both the equipment and the needs of the office. If it is desired to copy incoming correspondence, for example, is it necessary to pick up the handwritten signatures? If so, certain processes cannot be considered, for they are insensitive to some inks. But if the only material to be copied is to be under the control of the office itself, so that only suitable inks will be used, then those same methods may prove faster or more economical.

There is no quick way to select equipment. It will be seen, by examining the descriptions of the various processes covered in this section, that the characteristics and costs of each method vary a great deal.

In general, the processes are considered in two categories: copying and duplicating equipment. Copying equipment is used to make copies of existing material without requiring the preparation of some intermediate such as a master or stencil. It is intended primarily for making relatively few copies of any one original, and it can copy drawings, art work, perhaps even photographs, directly from the original.

Duplicating equipment, on the other hand, is intended to make long runs at high speed and low cost per copy. This requires—not by definition, but as things have turned out—that an intermediate, such as a master, stencil, or set type, be prepared.

The two types of equipment obviously are not used for the same purposes. Yet it is possible to combine them in many ways. Many of the copying processes can prepare the masters or stencils for one or more of the duplicating processes. A facsimile unit, for example, which requires several minutes to make a single copy, can transfer a detailed photograph onto a stencil which can then be used to make thousands of copies at high speed. Yet, it would have been impossible to produce, by hand, a stencil containing the same material, except by the most patient and expert work—and it might take weeks or months to do it.

Combinations of equipment, therefore, offer remarkable possibilities for performing the work of the office. While there is no one process that is perfect, there *are* several combinations which come close to achieving such degrees of perfection as an office executive might reasonably ask.

But it takes a little study. It is first necessary to recognize the characteristics of each process. Every copying machine is not a photocopier. Every duplicating machine is not a mimeograph. This is not said in jest. There are many who make this kind of mistake.

It is probably because they do make such mistakes—and seem to realize that they do—that so many office people rush to the booths of manufacturers of this equipment at business shows. There is so much that is offered, and they are eager to learn about it.

In any case, duplicating and copying equipment seems to attract more

inquiries than any other kind of office machinery. The business shows have taken note of this fact. And so has this magazine, which for years has discovered that this annual review of duplicating and copying equipment has been by far the most warmly received of all of the "Tools of the Office" series.

One must naturally inquire why there should be this interest. It seems to this magazine that it represents two things: First, it is a measure of the very real interest taken by office executives in finding better ways of doing things—from which exertion, we may hope and believe, new and better ways will indeed result. And second, it is a symptom of one of the overwhelming facts of life in 1957—the immensity of the flood of paperwork that has descended on the office since the end of the war.

In presenting again this annual review, *Office Management* hopes that its readers will find here some guidance in their efforts to find the right tools for their work.

The thirteen basic processes are listed in one or the other of the two main groups—copying and duplicating methods. It is difficult to consider that these thirteen cover the entire field completely, for with only a little stretch of definitions, the fields of microfilming and automatic typewriting—to say nothing of the data copying features of integrated data processing systems—might be included. But space limitations forbid. For those who wish to look a little further into microfilming and typewriters, the October "Tools" section may be of help; for those to whom integrated data processing is a subject of interest, an introduction to the "hardware" of that vast field may be found in the "Tools" section of the July issue.

In addition to describing the elements of each of these thirteen processes, the following pages offer lists of the principal manufacturers of each type of equipment, with brief descriptions of the lines they offer.

The Copying Processes

Diazo

Theory. The diazo process is one of several that depend on the formation of a dye to create the dark lines of which letters and drawings are composed, as opposed to those which merely provide a transfer of an ink or dye from a master or from raised type.

In the diazo process the dye is formed by a chemical reaction between a diazonium salt (known as a "diazo") and a combining element (known as a "coupler"). In order to control this reaction so that the dye appears only where it is wanted, the following procedure is employed:

One of the chemicals of which the dye is formed is affected by exposure to light so that it cannot react to form the dye. The light-sensitive compound in this case is the diazo itself, and the various diazo copying units are designed to provide that the diazo is exposed to light wherever a dye is not wanted. There are two basic methods, differing primarily in their physical characteristics, rather than in the chemical factors involved.

In the first method, copies are made on a sensitized sheet which contains both the diazo and the coupler. These chemicals are prevented from reacting by the presence of a "stabilizer." Should the stabilizer be neutralized, the entire sheet would, of course, become dyed.

To prevent this from happening, the sensitized sheet is covered by the material to be copied. The latter is placed face up over the copy sheet. A strong ultra-violet light is then passed *through* the original to the sensitized sheet. The dark lines of the original, of course, shield those portions of the copy paper from the light.

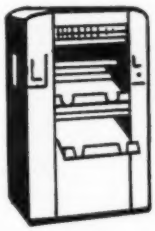
However, light does pass through the "white" areas of the original, and wherever it strikes the sensitized coating the diazo is broken down chemically so that it cannot react to form a dye when the stabilizing chemical is removed.

Thus, the first step in copying by the diazo method is to expose the copy sheet in a machine designed for the purpose. The second step, then, is to expose the sheet to a chemical which will neutralize the effects of the stabilizer. Ammonia is such a chemical.

In this first process, the copy sheet, having been exposed to light, is then exposed to a vapor containing ammonia. The latter inactivates the stabilizer, and the active diazo still remaining on the copy sheet combines at once with the coupler, producing the desired copy.

In the second process, the sensitized sheet contains only the diazo. This sheet is exposed in the same manner as in the first process, leaving active diazonium salt only in those areas where a dye is to be formed.

The exposed sheet then is exposed to a liquid solution containing the coupler. The dye-forming reaction occurs in the same chemical manner as in the first process, producing the final copy.



The two methods are sometimes referred to respectively as "dry" and "wet" processes, and the first is also known as the "ammonia-developing process." Actually, these terms tend to be misleading. While the so-called wet process does employ a solution, it is applied lightly with a roller, and the resulting copies are dry, for all practical purposes, as they emerge from the machine. The terms are further confused by uses in connection with photocopying and other processes which are chemically quite unrelated to the diazo process.

In practice, although two steps are required for making copies, both are accomplished in automatic sequence within the machine. The operator merely inserts the original and copy sheets and receives the finished copy a few moments later.

Since the diazo method depends on passing light through the original, it is obvious that only material on a paper sufficiently translucent can be copied, and, moreover, that copies must be "one-sided," that is, having written or printed material on only one side.

The first requirement is met by most office papers, which, although opaque to the eye, are sufficiently translucent to permit the passage of a strong light. Naturally, the quality of the copies is improved by an increase in the degree of translucency, as well as by an increase in the opacity of the printed lines.

The second requirement means that in order to copy two-sided originals, a one-sided translucent copy of

COMPARISON OF OFFICE COPYING AND DUPLICATING PROCESSES

COPYING PROCESSES. These processes are used to copy original material, including letters, art work, photographs, drawings, letterheads, etc. They are usually best suited for making from one to ten copies, but most can also prepare stencils or masters for one or more of the duplicating processes listed in the second half of this chart.

Process	Speed*	Cost Per Copy*	Can Process Enlarge or Reduce?	Duplicating Processes for Which Stencils or Masters Can Be Prepared	Characteristics of the Process
Diazo	200 copies per hour	1 cent	No	Offset	Copies are positives, in various possible colors. Translucent, one-sided originals required, or translucency must be made first. Process sensitive to most colors, less so to purples.
Facsimile	1 copy in 3 seconds	4½ cents	No	Offset; Stencil; Gelatin; Spirit	Copies are positives on specially treated paper. Process is used widely for wire communications, is getting increased use for stencil cutting.
Photocopy	1-2 copies a minute	8½-9 cents	Most cannot	Offset; Stencil (in special units)	Copies are positives on white or colored coated paper; some units make negatives. Sensitive to wide range of colors. Can make translucencies for diazo process. Some units can make several prints from one negative.
Thermo-Fax	1 copy in 4 seconds	5 cents	No	None	Copies are positives on buff or colored paper having a wax-like finish which can be reinforced with heavier backing. Process less sensitive to some kinds of ink.
Verifax	1 copy in 50 seconds; 3 in 1 minute	9-10 cents (single); 2-4 cents (multiple)	No	Offset	Copies are positives on bond or similar non-sensitized paper. Several prints can be made from one matrix. Process is otherwise similar to photocopying.
Xerography	1 copy in 3 minutes	6 cents	Yes	Offset; Spirit	Copies are positives on various kinds of paper or film. Process is widely used to make offset masters. It is sensitive to wide range of colors. Can make translucencies for diazo process.

DUPLICATING PROCESSES. These processes are intended to make multiple copies at high speeds. A master, plate, or stencil must be prepared, or type must be set. Except for the relief process, masters and stencils can be prepared by typewriter, by hand, and by one or more of the copying processes listed above. Costs per copy vary greatly with the length of the run and the quality of materials used. Assuming a run of more than just a few copies, costs per copy are a fraction of a cent. Because of the wide variations possible within each process, no attempt is made to compare them costwise.

Process	Speed* (Copies Per Minute)	Length of Run for Which Best Suited**	Copying Processes Which Can Prepare Masters or Stencils	Characteristics of the Process
Gelatin (HECTOGRAPH)	10-75	10-100	Facsimile	Prints on paper with glossy finish. Best copies from purple carbon, but other colors can be used and can be run simultaneously. Copies become fainter as run continues.
Offset (MULTILITH; DAVIDSON)	75-150	10 to many thousands	Diazo; Facsimile; Photocopy; Verifax; Xerography	Copies are of high quality. Ink and paper color can be varied; one ink run at a time. Equipment requires reasonably experienced operator.
Relief (MULTIGRAPH)	40-100	300 to 100,000	None—type must be set	Copies resemble typing or printing, depending on whether ribbon is used. Process often used for "fill-in" items and work with changing copy, since type can be changed during run. Prints one color at a time on any color paper.
Special Liquid (AZOGRAPH; CHEMOGRAPH; TRANSOGRAPH)	40-120	10-125	None at present	These three processes perform like the spirit process, but feature "cleanliness"—printing dyes are not formed until paper enters machine, to avoid stain hazard. Printing color is approximately blue-black, varying with the process. Copies become fainter as run continues. Some machines can handle spirit process as well.
Spirit (LIQUID; FLUID; LIQUID HECTOGRAPH)	40-120	10-350	Facsimile; Xerography	Prints on paper with glossy finish. Variety of colors possible, but purple gives best results. Numerous colors can be run simultaneously. Copies become fainter as run continues.
Stencil (MIMEOGRAPH)	40-200	10 to several thousand	Facsimile; Photocopy (special units)	Copies are possible in any color ink on any color paper. Quick-drying inks permit use of bond and similar papers; other inks require rough paper. Some machines print more than one color simultaneously.

*Speed and copy costs are estimates for letter-size copies using materials of average quality and runs of average length. As circumstances vary, figures above or below those listed may be obtained. Speed figures allow not only for machine differences but for differences between manual and power operation.

**These figures do not represent machine limitations but are based on "practical" considerations such as cost, speed, method of operation, and other factors.

Each of the copying and duplicating processes has its strong and weak points. It is important to select the right process for the job it is to do.

each side must be made first. This can be done with a photocopier or with facsimile or xerographic equipment. It can also be done directly in some diazo process equipment, using a reflex film designed for the purpose.

Characteristics. The process makes positive copies; a number of different printing colors are available, as are various colors of the copy paper. In special cases, using hand application of chemicals, it is possible to obtain several different printing colors on the same copy sheet.

Copies may be made on translucent materials, and offset masters also can be prepared by the diazo process.

Much of the equipment is designed to handle large-size materials such as engineering drawings. The equipment is usually of the continuous-flow type, with original and copy sheet being advanced through the various steps mechanically over roller systems. It may operate at speeds as high as 75 feet a minute or more, or as slowly as four feet a minute. Generally, a small model, such as one designed to handle copies of letter size, can turn out about 200 copies an hour.

The diazo process is relatively inexpensive. A typical letter-size copy is estimated to cost between ¾ and 1¼ cents. Materials run at a cost of about two cents a square foot.

The Manufacturers

Charles Bruning Co., Inc., 4700 *Montrose* Ave., *Chicago* 41. Bruning's Copyflex line includes eleven models taking copy of unlimited length, and limited in copy width only by the throat of the machine, which ranges from 11 to 54 in., depending on the model. One model, however, can copy from bound books. Printing colors available are black, brown, red, blue, and yellow; paper colors available are blue, green, yellow, pink, salmon, and white, and card stock is also offered. With hand developing, multi-color prints can be obtained. Bruning equipment is of the second type described above; in this process the coupler is contained in a developing solution, a light film of which is applied by roller within the machine. Reflex film is available to permit copying opaque or two sided originals in Copyflex equipment. Price range: $555 to $5,625.

Copycat Corp., 41 *Union Square West, New York* 3. Copycat offers a line of two machines, the smaller of which prints copy to 10 by 14 in. in size, the larger accepting copy in widths to 14 in. and of any length. Features include automatic feed and automatic paper separation. Machines are floor models. Price range: $1,095 to $5,095.

Ozalid, Div. of General Aniline & Film Corp., Johnson City, N. Y. Eight Ozalid models are offered, ranging from the desktop-size Bambino, for letter-size copies, to large machines accepting copy up to 54 in. wide. Designed operating speeds: 10 to 40 ft. per min., varying with the model. Positive working paper and aluminum Ozalith plates are available. Price range: $410 to $7,350. The company also offers Ozacard and Actifilm Printers for printing from microfilm in unitized form. This process has been developed jointly with Filmsort.

Paragon-Revolute Corp., 77 *South Ave., Rochester* 4, *N. Y.* The Revolute line contains twelve large models intended primarily for copying large-size material such as engineering drawings. Machines can accept copy in maximum widths of from 45½ to 58½ in., depending on the model, and in unlimited lengths. Speeds of operation: 20 to 75 ft. per min. (optimum), varying with the equipment. Price range: $1,925 to $10,350.

The C. F. Pease Co., 2601 *W. Irving Park Rd., Chicago* 18. Pease offers seven large models designed for working with large-scale material such as engineering drawings. Maximum copy widths acceptable vary from 42 to 54 in., depending on the machine, with lengths not limited. Operating speeds: 0 to 85 ft. per min. Features include automatic stacking, in original se-

quence, of copy and prints. Price range: $2,125 to $6,500.

Peck & Harvey, 5650 N. Western Ave., Chicago 45. Nine models are offered, most of them of large size for work with enginering drawings and similar materials. Maximum copy width acceptable, depending on the machine, ranges from 20 to 46 in.; copy of unlimited length may be taken. Optimum operating speeds range from 30 to 75 ft. per min., according to the machine. Synchronized printing and developing, and automatic separation of original and copy are features. The new Arrow is designed particularly for office systems work. Price range: $1,195 to $4,595.

Peerless Colonial Products, Inc., 200 N. Main St., Ivoryton, Conn. This company offers two Blu-Ray models, accepting copy to widths of 22 and 42 in., and operating at speeds to four feet per minute. Machines are compact and can be set on table tops. Price range: $257.50 to $287.50.

Pelprinter, Inc., 555 Central Ave., Orange, N. J. The Pelprinter "70" is a portable unit, 18 in. long, 9½ in. wide, and 4 in. deep, and weighing 5½ lbs. It has a case with a handle. Price: $70.

Photorapid of America, Inc., 320 Broadway, New York. While the Photorapid line consists primarily of photocopying equipment, the company offers the Helio Printer, a flat-bed unit for exposing diazo copies, and the Helio Developer Tray, for developing the copies.

Tecnifax Corp., Holyoke, Mass. The Hi-Q Diazoprocesser accepts copy up to 54 in. wide and of unlimited length. It prints at rates to 125 ft. per min. The feed board is continuously adjustable to different depths, to permit easy handling of material of varying sizes. Prints are delivered face up. Price: $15,000.

Electrofax

Theory. The Electrofax process, which has been developed by the Radio Corporation of America, is used particularly for preparing offset and photoengraving printing plates.

A special Electrofax coating is applied to the plate. This coating has a photoconductive pigment. When it is to be used, it is given an electrostatic charge. The material to be copied is placed in a camera or equivalent and its image is projected onto the plate. (Contact exposure, using a positive or negative transparency, is also possible.)

The electrostatic charge on the plate is reduced by the effect of light on it, so that the image is reproduced invisibly on the plate in the form of electrical charges—the darkest lines retaining the highest charge.

The surface is then traversed by a magnetic brush which carries a resin powder. The powder is attracted to those areas where an electric charge remains, thus reproducing the original material. It is possible to produce negatives from positives, if desired.

The plate is then "fixed" by a few seconds' exposure to heat. The powder is thereby fused into a permanent image.

To make an offset plate, the surface is swabbed with a chemical which leaves the image receptive to greasy inks, while the background becomes receptive to water. Offset masters with a paper base, as well as metal plates, can be prepared in this manner.

The process permits the copying of all kinds of materials, including photographs, art work, typed, printed, and drawn material. It reproduces tonal gradations automatically.

While a number of machines using the principle have been developed, none are commercially available at present. The process therefore is not listed in the chart on page 42. It appears that it will be both fast and inexpensive in operation.

The Manufacturers

Radio Corp. of America, Front & Cooper Sts., Camden, N. J. RCA has developed the Electrofax process. Details on the actual equipment were not available at press time.

Facsimile

Theory. While the facsimile process is especially familiar from its use as a communications device (it is the basis of equipment used to transmit copies of telegrams from telegraph offices directly to the desks of subscribers), it has certain copying and duplicating functions also. Facsimile equipment, even though designed for long-distance communications, does actually produce copies of the original material. In effect, it provides single-copy duplication at a distance. However, if it can work at a distance, it can also work close at hand, and some facsimile equipment is intended specifically for making copies within the office.

The principle, in fact, is finding increased application because of its capacity to make stencils, as well as gelatin, offset, and spirit masters, which can then be used to make long runs on standard duplicating machines.

The process is basically photo-electric in nature. Both the original material and the sheet on which the copy is to be made are "scanned" simultaneously and in synchronization. Scanning in the copying unit is accomplished by a narrow light beam which, through a system which is both optical and mechanical, is caused to pass in a continuous track over the entire surface of the material being copied. The corresponding operation in the receiving unit consists of passing a stylus across the entire surface of the copy paper in perfect synchronization with the movements of the light beam in the copying unit.

In the former, the light beam is reflected into a photo-electric cell where it is used to generate electric currents. These currents are controlled in strength by the intensity of the reflected light. Thus, by suitable transmission means, an electric current can be directed into the stylus of the receiving unit, and this current varies according to the intensity of the light reflected from the original material. In the receiving unit, the current in the stylus serves to "burn" the specially made surface of the copy paper. As it "burns," it turns dark, and the degree of darkness varies directly with the degree of darkness of the original material.

Since both the scanning light and the stylus are synchronized, the passage of current through the stylus produces dark areas corresponding exactly to those of the original, thus producing a facsimile copy.

In most equipment, the mechanical arrangements for controlling the track of the scanning light and the stylus consist of a system using a rotating drum around which the copy is placed, in combination with a screw-type mechanism which advances the optical system (or the stylus) from one end of the drum to the other. The actual

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the Readers' Inquiry Coupon on page 102.

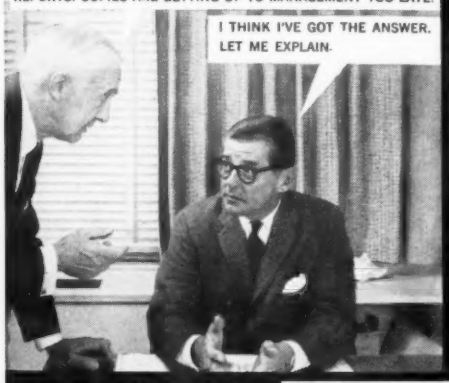
A whole week's work now takes us just 4 hours...

with this new Ozalid One-Writing method for all accounting reports!

IT STARTED ONE DAY LAST YEAR— THE PRESIDENT CAME INTO MY OFFICE...

WE'VE GOT TO DO SOMETHING ABOUT WEEKLY ACCOUNTING REPORTS. COPIES ARE GETTING UP TO MANAGEMENT TOO LATE.

I THINK I'VE GOT THE ANSWER. LET ME EXPLAIN.



EACH OF THESE THREE GIRLS SPENDS A GOOD PART OF EACH WEEK TYPING ACCOUNTING REPORTS AND RECORDS... THE WEEKLY SALES REPORT, FOR EXAMPLE.

BUT IF WE USED THE OZALID DIRECT COPY SYSTEM, WE'D ELIMINATE ALL THIS TYPING. ONE GIRL COULD DO THE JOB IN A LOT LESS TIME.

A FEW MONTHS LATER...

I'M GLAD TO SEE WE'RE NOW GETTING THOSE REPORTS ON TIME.

YES. THEY'RE A LOT MORE ACCURATE, TOO. AND WE SAVE HOURS OF TYPING.

THE JOB IS REALLY A BREEZE NOW. IT ONLY TAKES ME 4 HOURS A WEEK.

THE PURCHASING DEPARTMENT LIKES OURS SO MUCH, THEY'RE PUTTING IN THEIR OWN OZALID SYSTEM.

Lowest Cost Per Copy

Ozalid *Direct Copying* ends wasteful "repeat writing" in every department... makes dry, perfect copies in seconds. And a letter-size sheet of Ozalid paper costs you *less than a penny*—lowest cost per copy of any copying process.

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☐ Purchasing ☐ Order-Invoicing ☐ Accounting
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Name_____
(PLEASE PRINT)

Position_____

Firm_____

Address_____

City_____ State_____

track described over the surface of the drum, of course, is a shallow spiral. It may be set to place successive lines at spacings as close as 750 to the inch.

There are facsimile units, however, which can accept copy of unlimited length. In this case the copy is scanned as it enters the machine, and it is not wrapped around a drum.

In a modification of the receiving unit, the stylus can be used to punch tiny holes in the copy material. Used with stencils, it can transfer material of almost any kind, including photographic halftones, drawings, letterheads, and so on, to a stencil for subsequent long-run duplication. Similarly, used with suitable materials, it can prepare masters for offset, gelatin, or spirit duplicators.

Characteristics. The process is not intended for high-speed work. Single copies require about three minutes in most cases, and stencils and masters may require six minutes. However, this rate is much faster than most direct preparation of masters and stencils, and the process can transfer many kinds of material which could not be placed on a stencil or master by direct preparation.

The method can also be used to prepare translucent copies for use with diazo process equipment.

In general, single copies cost about 4½ cents, while offset masters can be prepared for about 20 cents.

The Manufacturers

Addo-X Inc., 300 Park Ave., New York 22. The Roneo-Tronic uses the facsimile process to cut stencils for use on this company's Roneo line of stencil duplicators. It can copy photographs, charts, maps, drawings, etc. from original material onto stencils for long duplicating runs.

Air Associates, Inc. SEE: *Electronic Communications, Inc.*

Bohn Duplicator Corp., 444 Fourth Ave., New York 16. The Electro-Rex stencil cutter, which operates on the facsimile principle, is a desk-top unit, specifically intended to prepare stencils and offset plates.

Electronic Communications, Inc., Air Associates Div., Teterboro, N. J. This company's Electronic Messenger is intended primarily as a means of communications. In the process, however, it creates duplicates of original material. The units are each slightly larger than a typewriter.

L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa. This organization offers facsimile equipment which is designed primarily as a communications medium. In the process, however, it creates facsimile copies of original material, and in this sense it may be considered to have certain applications as a copying device.

Rex-Rotary Distributing Corp., 387 Fourth Ave., New York 16. The Electro-Rex is a special machine for preparing stencils for long runs on stencil duplicators. It uses the facsimile principle and can copy typed, written, drawn, and other material, including photographic items, onto stencils. Scanning may be set at spacings from 125 to 750 lines to the inch. The unit has a sensitivity control to eliminate undesirable tones. Price: $1,695.

Stenafax Div., Times Facsimile Corp,. 540 W. 58 St., New York 19. Stenafax equipment can be used for making single copies, stencils, and masters for the offset, gelatin, and spirit processes. Two models are available for making copies in sizes to 8½ by 14 in. The equipment stops automatically at end of recording. Price: $1,895 F.O.B. New York.

Stewart-Warner Electronics, 1300 N. Kostner Ave., Chicago 51. Data-Fax is a unit capable of taking copy up to 8¼ in. wide and of any length and reproducing it at a rate of 4 in. a minute. Since it is designed primarily as a communications device, separate receiving and transmitting units are offered.

Times Facsimile Corp. SEE: *Stenafax.*

The Western Union Telegraph Co., 60 Hudson St., New York 13. Western Union's Intrafax and Datafax equipment is intended primarily for communications. However, it makes printed copies in the process and can be used to make single copies as well as masters for the offset and hectograph processes.

Photocopy

The principles of photography have been adapted to produce many useful office machines. The term "photocopying" is normally limited to a particular process in which copies are made through a combination of (1) the chemistry of photography, as opposed to the chemistry of xerography, the diazo process, or any of the other copying process; (2) a mechanical arrangement in which copies are made through direct contact with sensitized materials, as opposed to the use of a camera or other optical system.

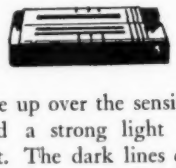
Thus, a standard copying camera is not a photocopier in this sense, nor is microfilm equipment in the category, since both depend on optical systems.

However, there are certain types of camera equipment that are being used in the office, and, in order to give suitable coverage to photographic means of copying materials in the office, some of these are included in this section.

True photocopying may take several forms.

In the first place, the original material may be exposed by either the "direct" or the "reflex" method, as appropriate.

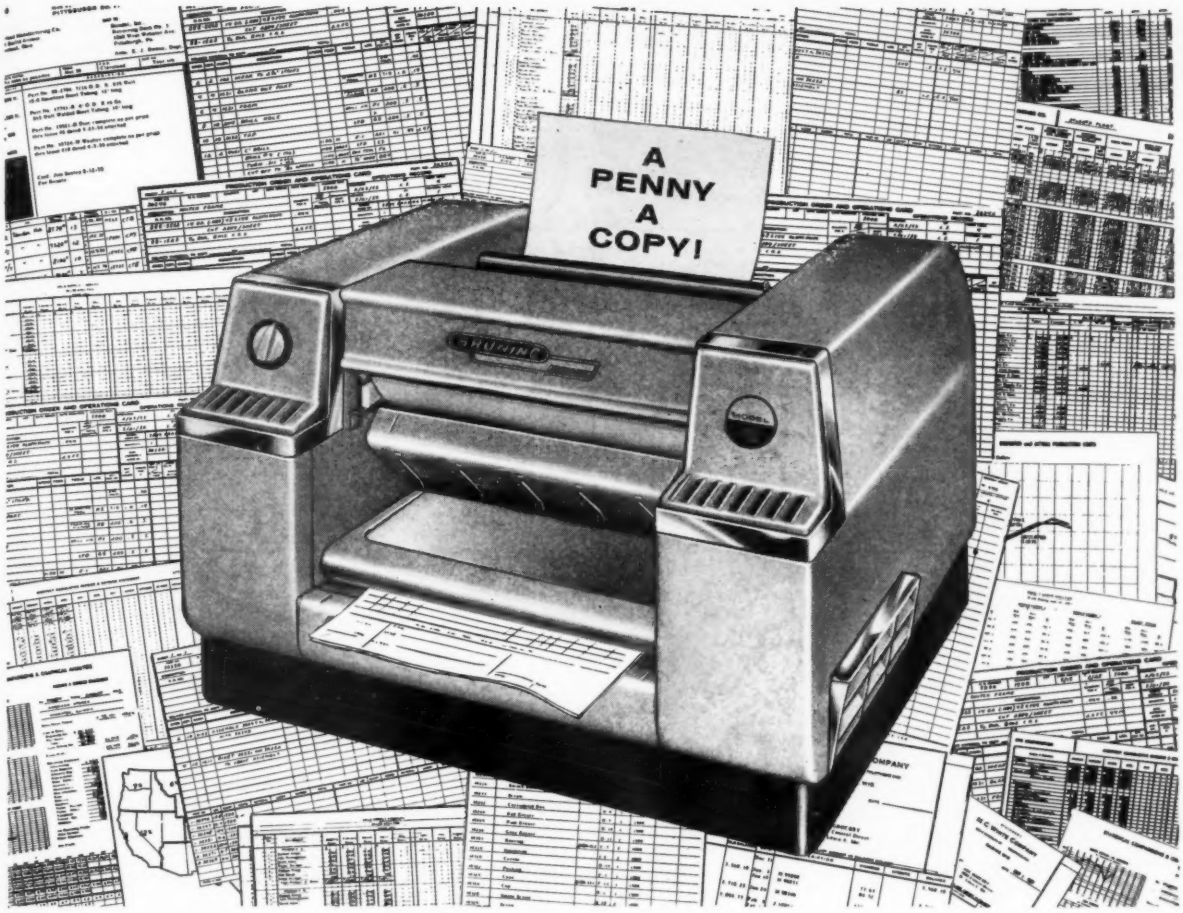
The *direct* method of exposure is similar to that used in the diazo process. That is, the original material is



placed face up over the sensitized copy paper and a strong light is passed through it. The dark lines of the original, being opaque, shield the portions of the sensitized sheet directly beneath. The white areas, however, permit the passage of light, and where the light strikes the sensitized coating it produces a chemical reaction.

The *reflex* method accomplishes the same result, but with a different mechanical arrangement. In this case the original is placed face to face with the sensitized sheet and the light is passed through the copy paper rather than through the original. The sensitized coating is so designed that it is not noticeably affected by light passing through it from the back, but it does respond to light reflected from the original material. Thus, the light passes through the copy sheet to the original; here the dark lines absorb the light and the light areas reflect it. This reflected light, which bounces back from the white areas of the original, produces on the sensitized sheet the same effect as the light passing through the original in the direct method of exposure.

Once the sensitized sheet has been exposed (which is accomplished in a "printer") it is removed from the unit, along with the original, and separated from it. The sensitized sheet is then placed face to face with another chemically treated sheet and



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placed in a "processing" (developing) unit. Here, under the influence of a chemical solution, a chemical reaction occurs to form a dye.

As the two sheets are removed from the unit, they remain face to face and are left so for about fifteen seconds, after which they are pulled apart. As a result, the dye remains on the second sheet, leaving a copy of the original material.

This is, of course, a two-step process, requiring two sheets of sensitized paper, each of a different character. The first is generally known as a negative.

Printers are sometimes manufactured as separate units, and some of these are designed to be small and light enough to be carried conveniently from place to place. Some units are of the flat-bed type, in which the exposure is made by placing the original and the negative on a flat translucent surface through which the light passes to the sensitized sheet. Such units can copy pages from bound material without the need of removing the pages. Other units are of the continuous type, in which the sheets are passed through the unit by a system of mechanical rollers which are usually power driven. The speed of operation controls the amount of time the paper is exposed to the light source.

Processors, too, may be separate units. Usually they are of the continuous type.

Many office photocopiers, however, are combination printers and processors. They are usually designed so that the original exposure is made after inserting the original and the negative through one set of slots, after which they emerge through another, leaving the negative to be re-inserted (with the final copy sheet) through another set of slots; the finished material then is returned through the slots used to return the negative and original.

Some combination units, however, incorporate printers of the flat-bed type with the processing unit, making them suitable for the complete processing of copies of bound material.

A second basic method is the so-called "autopositive" method. In this procedure, only one sensitized sheet is used. Normally this sheet gives a white-on-black negative which may be used in that form. Either the direct or reflex method of exposure can be employed. If the direct method is used, the original is placed face up over the sensitized paper. A right-reading copy is, of course, the result. If, because the original material is two-sided or is too opaque, the reflex method is used, the printing is reversed, and if a right-reading copy is required, the first copy is used as an original to make the final copy. It is possible, however, using certain types of equipment, to obtain right-reading copies by the reflex method in one step. The sensitized paper is placed face up over the original (the reverse of the usual method), and this in turn is covered with a special sheet of semi-translucent plastic. The special design of the materials is such that the sensitized coating is largely shielded from the direct light but does respond to light reflected through the copy paper from the original.

Some photocopiers can make offset masters, and in some cases multiple photocopies can be made from one negative. As has been pointed out above, standard copying cameras are sometimes used in the office. Such cameras make it possible to enlarge or reduce the original material, which is not true of the transfer method of photocopying.

In some units, the complete operation can be handled by one unit in which the material is moved continuously through the equipment by mechanical means. Some equipment, in fact, can be set to make a specified number of copies, merely by using the proper controls on a control panel; once the materials are placed in the unit, the entire process continues automatically. Since this method uses true photographic procedures, the original must be exposed and the final print must be developed, fixed, and washed. This is all done automatically. For reasons of convenience, such equipment may also be provided with a drying section so that the copies, which otherwise would have to dry for a period of hours, will emerge in immediately usable condition.

These cameras are usually provided with a prism arrangement so that the reversed negatives which would normally be produced will be converted into right-reading copies. Normally the prints are white on black, but black-on-white copies can be obtained either by processing the negative as a new original, or by using suitable materials that will produce black-on-white positives in one step.

Characteristics. Photographic methods offer extremely good results in terms of accuracy of copies. This is largely a result of the fact that the chemicals employed are sensitive to a wide range of colors. It is true that yellows and oranges do not record well—if at all, in some cases — but these colors are rarely used in commercial work except as shadings, and usually the outlines of any numbers or letters printed in yellow are also paralleled in some other color that offers no problem to the photocopier.

While most copies are made on white paper, it is possible to obtain copy paper in other colors, which allows for color coding and other possible uses. Copies can be made also on film or on translucent materials. This, in fact, is a convenient method for copying opaque or two-sided originals for reproduction by the diazo process; this step is particularly valuable if substantial numbers of copies are to be made, since the diazo process is considerably less expensive in operation. Moreover, photocopy materials can be exposed by the reflex method in a diazo unit, using a yellow filter; these may be processed in a standard photocopy developing unit, which may be purchased separately from the printer.

Letter-size photocopies are generally considered to cost betwen 8 and 11 cents apiece. Autopositive copies, using only one step, cost half that amount.

Operating speeds vary with the exposure required, the strength of the light source, and the sensitivity of the materials. In general, photocopies are made at speeds of from 30 to 60 seconds each.

The Manufacturers

American Optical Co., Instrument Div., Buffalo 15, N. Y. Readers made by this company for use with opaque microrecords can be used to make full-size printed copies.

American Photocopy Equipment Co., 1920 W. Peterson Ave., Chicago 26. Apeco's line of Auto-Stat machines includes models of the standard type, in which copy and copy paper pass through the machine, and flat-bed printers for making copies of bound material. Models vary from those of letter size to machines which can print areas as large as 18 by 22 in. Some equipment is designed to be portable. Also offered is the Apeco

Eject-O-Matic, a paper dispenser designed to protect paper from light exposure and to eject one sheet at a time.

Ampto, Inc., an affiliate of Anken Chemical & Film Corp., Newton, N. J. Ampto offers two continuous photocopiers, one accepting material up to 9 in. wide, the other accommodating material in widths to 14 in. The smaller unit is portable and has a carrying handle. Price range: $189 to $424.50. The company also offers equipment and supplies for use in its Reversal Negative diffusion transfer system for making negatives from which offset printing plates can be made. The Reversal Negative film is exposed with the original material in any vacuum frame exposing unit, arc light box, or plate maker, using either the reflex or direct method as appropriate. The film is processed in Ampto's Reversal Transfer Machine, a small unit priced at less than $100. The resulting film can be worked in the same manner as standard litho film, and is used to make offset plates.

Burroughs Corp., 6071 Second Ave., Detroit 32. The Bell & Howell line of microfilm readers offered by Burroughs includes facilities for making prints from roll microfilm.

Copease Corp., 425 Park Ave., New York 17. The Copease line includes standard continuous-flow photocopiers and a unit incorporating both a processing section and a flat-bed printing section which can be used to copy bound material. Some units are combination printers and processors, but separate printing (exposing) and developing (processing) units are available. Continuous-type machines take copy of any length, with maximum widths of 9, 14, or 17 in., depending on the machine. Flat-bed units can accept copy up to 8½ by 14 in. (in the combination Book Copier model), and to 14 by 17 or 17 by 24 in. in separate flat bed printers. The equipment can be used to produce paper offset plates directly. Prices: for combination units, $295 to $397; for exposing units, $107.50 to $224.50; for developing units, $192.50 to $269.50. All prices F.O.B. New York.

Copycat Corp., 41 Union Square West, New York 3. Copycat photocopiers accept copy of unlimited lengths, in maximum widths, depending on the machine, of from 9 to 18 in. Copies are black on white or on colored paper. Price range: $199 to

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$575. Autopositive equipment is also included in the line; two models are offered, accepting copy to 9 or 14 in. wide, depending on the model. These Auto-Processor units are particularly intended for making prints from microfilm. Prices: $195 to $295.

Copy-Craft, Inc., 105 Chambers St., New York 7. Copy-Craft offers a line of combination models, separate printers, and separate developers. Some of the printers are of the flat-bed type and can copy pages from bound material. Maximum copy accepted by flat-bed printers ranges from 8½ by 14 to 18 by 24 in. Developers take copy in maximum widths of 9, 14 or 18 in. Combination units take copy in 9 or 15 in. widths, maximum.

Cormac Industries, Inc., 80 Fifth Ave., New York 11. The Cormac line includes continuous-type machines and flat-bed machines for printing from bound material. The latter can take copy up to 14 in. wide, depending on the machine. The flat-bed types print in areas up to 8½ by 14 in. in size. Some machines are portable and are equipped with carrying cases.

A. B. Dick Co., 5700 W. Touhy Ave., Chicago 31. Dick introduced a new photocopy machine last summer which combines a flat-bed printer with a continuous-flow processor. The printer can copy pages from bound material; maximum copy size which can be accepted is 9 by 14½ in. The unit can also be used to copy all kinds of material onto aluminum offset transfer plates, for use on offset duplicating equipment. Price: $350.

Diebold, Inc., Flofilm Div., P. O. Box 127, Norwalk, Conn. Diebold's Flofilm microfilm readers offer facilities for making full-size prints on photosensitive materials from roll microfilm.

Duophoto Corp., 236 Fifth Ave., New York 1. Duophoto offers the Duomatic, which is designed to make right-reading autopositive copies in one step from two-sided and opaque material. Flat-bed and rotary-feed printers are also offered.

Filmsort Div., Miehle-Goss-Dexter, Inc., 50 S. Pearl St., Pearl River, N. Y. Filmsort, which manufactures aperture and jacket cards for mounting unitized microfilm images, offers a line of equipment in which such images can be read, and by means of which full-size opaque prints can be made from the film. While this equipment does not fall directly into the category of photocopiers, photographic methods may be used with it to make the copies. Maximum printing area ranges from 11 by 11 to 17 by 17 in., depending on the model. Also offered are printers which copy images from cards and reproduce them onto other cards; one such model is fully automatic and is priced at $15,750. A manual version is priced at $400. Price range of other readers: $365 to $995.

General Photo Products Co., Inc., General Photo Bldg., Chatham, N. J. General Photo's Exact-Fax line includes printing units, developing units, and combination models. Printing units of the flat-bed type, which can copy pages from bound material, have maximum copy sizes of 8½ by 14 and 18 by 24 in. One model can take copy to 20 by 40 in. Developing units are of the continuous type, with throat widths of 12 and 20 in. Standard combination model accepts 12-in. copy width, but units for widths of 20 in. and more are available; these are of the continuous type. Price range: $85 to $450. Paper dispensing units are also offered.

Gestetner Duplicator Corp., 216 Lake Ave., Yonkers, N. Y. While

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Gestetner does not offer an office photocopier as such, its Photoscope uses photographic principles to copy written, printed, drawn, and other types of material onto stencils for subsequent long runs on standard stencil duplicators.

Griscombe Products, Inc., 133 W. 21 St., New York 11. Griscombe's line of microfilm readers provides facilities for making full-size prints from microfilm.

The Haloid Co., 2-20 Haloid St., Rochester 3, N. Y. Foto-Flo Model C is camera-type equipment, capable of enlarging and reducing. Features offered include print conveyor system, prism for producing right-reading copies, and developing time controls. Price: $3,600, plus accessories. Rectigraph models also offered, at prices of $2,200 and $2,475.

Hanimex (USA), Inc., 770 Eleventh Ave., New York 10. Hanimex offers microfilm reading equipment, which can be used to make full-size prints from roll microfilm.

Hunter Photo-Copyist, Inc., 566 Spencer St., Syracuse, N. Y. The Hunter HeccoKwik line includes standard continuous-flow combination models, as well as separate developing units and flat-bed printers suitable for copying pages from bound material. Some machines are portable, and one, the Hunter Cub, is particularly intended for smaller offices.

Kenro Graphics, Inc., 25 Commerce St., Chatham, N. J. Kenro's process cameras, while not photocopiers in the sense used in this section, are used to prepare, by photographic methods, plates which can be run on office-size offset duplicators. As such, they may be considered as valuable adjuncts to office duplicating processes. The Vertical 18 Process Camera produces line or halftone negatives to 14 by 18 in. in size, can enlarge to 300 per cent and reduce to 33⅓ percent. Price: $1,250.

F. G. Ludwig, Inc., 66 Coulter St., Old Saybrook, Conn. Ludwig offers a variety of Contoura and Contoura-Matic equipment. The line includes flat-bed printers capable of copying pages from bound material, separate developing units of a simple, manually operated type, and the new Contoura-Matic, a photocopier of the continuous type. Some of the equipment is portable, for field use. Price range: $137.45 to $420.

Microlex Corp., 1 Graves St., Rochester 14, N. Y. Microlex, which manufactures readers for opaque microcards as well as the cards themselves, offers facilities for making white on black original size photocopies from the cards.

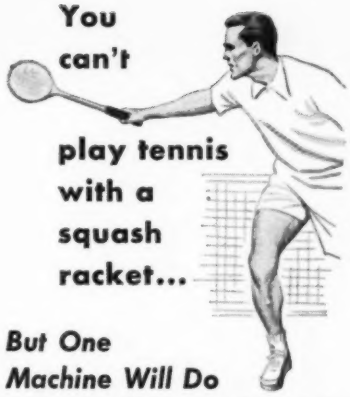
Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6. This company has recently announced a machine which can make positive, original-size prints from roll microfilm in a matter of a few seconds. The copying process is described as "electro-chemical." While it is not photocopying in the sense in which the term is used here, it is included in this list because of its relationship to other photographic techniques.

Nord Mfg. Corp., 366 Jericho Turnpike, Mineola, L. I., N. Y. The Nord Wizard is a combination unit embodying a flat-bed printer and a continuous-type processing section. It can copy pages from bound material. Maximum printing area: 9 by 15 in. Price: $179.

Peerless Photo Products, Inc., Shoreham, L. I., N. Y. Peerless' Dri-Stat line contains five models. Continuous-type units can accept copy to maximum widths of from 9 to 14 in., depending on the model. Flat-bed printers, for copying from bound material, are also available. Auto-Feed is an automatic processing feature for providing automatic feed to the processing section. Price range: $195 to $525. Also offered is the Peerless Neoflow Camera, for continuous flow reproduction, at reduced size, of engineering drawings. It can take original materials up to 42 in. wide. Available reduction ratios range from 2:1 to 6:1. A Neoflow Processor is also available, for producing finished copies.

Photorapid of America, Inc., 320 Broadway, New York. The Photorapid line contains printers, processors, and combination units, of both continuous and flat-bed types. One of the combination models, the new Satellite, has a printing section of the flat-bed type, for making copies from bound material. Other flat-bed printers are offered, providing facilities for copying materials to 18 by 24 in. in size. Also offered are a printer and a de-

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the Readers' Inquiry Coupon on page 102.



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veloper tray for exposing and developing diazo copies. The new Satellite is priced at $169.50. The Copy-Clark, also a new unit, is a camera for making direct positives, for use in photo-offset printing. This unit can enlarge and reduce.

Photostat Corp., 1001 *Jefferson Rd., Rochester* 3, *N. Y.* Photostat offers an extensive line of photographic equipment of the camera type (as opposed to the contact or transfer type normally implied in the term "photocopier"). The line includes models which can make prints 8½ by 11 in. in size or smaller, several models which can copy two or four letters at once, and larger models usable for engineering drawings and other large materials. Some models are manually operated, while others are of a "continuous" type. In using the latter, the operator merely places material on the subject holder, selects an exposure time, and presses a button. The equipment then carries on the entire operation, delivering finished "dry" copies automatically. Some models can be set to produce a specified number of copies (up to 499, in some cases), by selecting the number on a control panel. The equipment can enlarge and reduce. Both negative and positive copies can be produced, which in all cases are right-reading.

Recordak Corp., 415 *Madison Ave., New York* 22. Although technically not in the category of photocopying equipment, Recordak's extensive line of microfilm equipment includes facilities for making prints from microfilm image. Photographic principles are used. (*See also*: *Verifax.*)

Remington Rand, Div. of Sperry Rand Corp., 315 *Fourth Ave., New York* 10. Remington Rand's extensive line includes continuous-type transfer method photocopiers of the Transcopy line, as well as camera-type equipment of the Dexigraph line and special purpose equipment such as Photocharger units for libraries, and Photo Clerk cameras. Also offered are flat-bed printers of the Portagraph line. Transcopy units include combination printers and processors as well as separate processors. Flat-bed units can take copy as large as 24 by 36 in. Continuous units, depending on the model, take maximum copy widths of from 9½ to 15½ in., in unlimited lengths. Dexigraph cameras can enlarge and reduce; Photocharger and Photo Clerk Cameras provide reduction only. Price range: $197.50 to $4,895.

Robertson Photo-mechanix, Inc., 7440 *Lawrence Ave., Chicago* 31. Robertson offers a line of camera equipment and accessories which may be used to prepare xerographic plates, presensitized offset plates for office duplicators and other offset equipment, as well as making film copies. Some of the equipment requires a darkroom, some can be used in lighted rooms.

Rovico Inc., 318 *Market St., Newark* 2, *N. J.* The Rovico Fotomate line includes three models of the continuous type, with throat widths (governing maximum copy width) of 10, 15½ and 19½ in.; copy length which can be accepted is unlimited. Units are combination printers and processors. Prices: $275, $375, and $475. In addition, the company offers four flat-bed exposing units, one of which is designed to be portable, and three developer units. Prices of these units: $95 to $289.50.

Thermo-Fax

Theory. The Thermo-Fax process makes use of the tendency of most office inks to absorb light and, in that process, to generate heat. Essentially, it depends on the ability of such inks to absorb more light than is absorbed by other materials.

The copy paper used is heat-sensitive, responding to heat by "burning" slightly, and thus turning dark. The mechanical procedure for making copies is as follows:

The copy paper is placed, with its heat-sensitive coating face up, on top of the material to be copied. The two sheets are then exposed to an infrared light source, and the light passes through the copy paper to the original.

On striking the dark lines which form the letters, numerals, and so on, of the original material, the light is absorbed, generating heat. As a result of this heat, the portions of the copy paper directly above the lines turn dark, thus reproducing the material beneath.

Equipment using this process is of two types: flat-bed printers and continuous models. Flat-bed units can copy material from bound volumes. When continuous models are used, the original and the copy paper are inserted into the machine and are then moved before the light source by means of a system of power-driven mechanical rollers.

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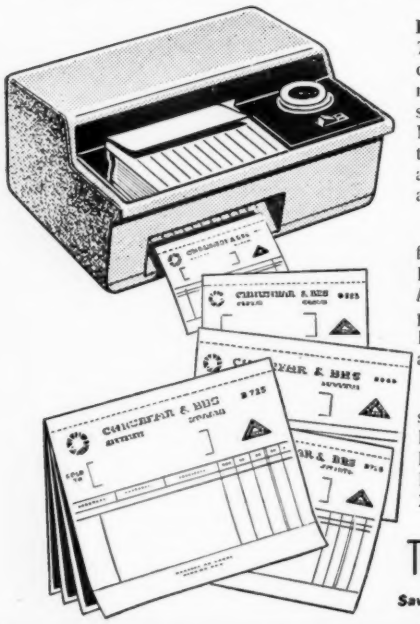

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The process is complete in one step, and since no solutions are used, the copies are totally dry, whereas some of the so-called "dry" processes produce copies that are slightly moist and require a few minutes to dry completely.

The Thermo-Fax method is most successful in copying materials printed in a heat-absorbing ink, such as those with a carbon base, or in pencil. Certain inks, especially some of the blue inks, are not heat-absorbing and may not record at all. Such inks may be used to make notations on an original which are not desired on the copies.

Characteristics. The copy paper is translucent and has a wax-like finish. Standard paper is of a buff color, but other colors are available. Printed matter is black. The paper is light in weight; if reinforcement is desired, an inexpensive back-up paper may be bonded firmly to it by processing it in the machine.

Letter-size copies can be made in about four seconds. Two-sided and opaque originals are easily copied in one step.

Costs per copy are about 4½ or 5 cents.

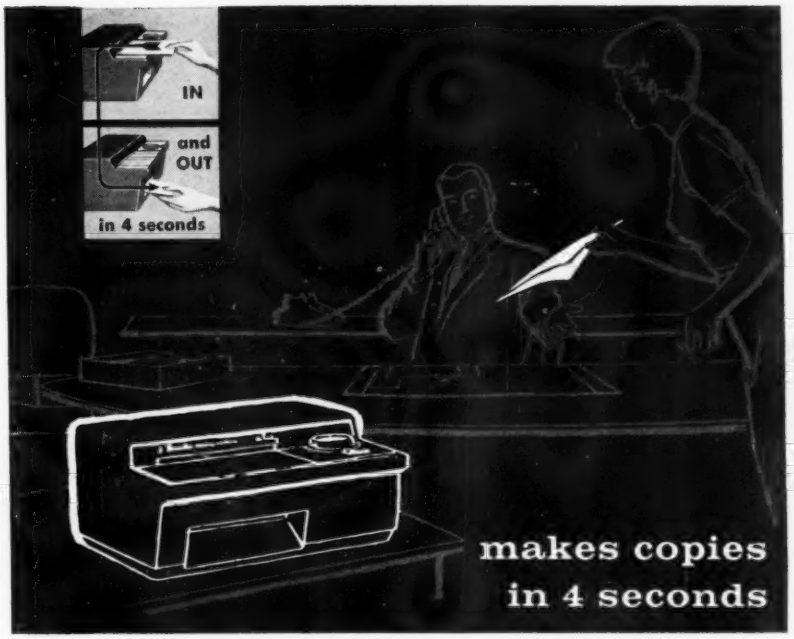
The Manufacturers

Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6. Three Thermo-Fax models are offered. All are of table-top size. The Premier is of the flat-bed type, copying pages from bound material. The other two are of the continuous type: the Secretary accepts copy up to 8½ in. wide, and the Fourteen takes copy 14 in. wide. Copy length is unlimited. Also offered are supplies designed for special uses with the equipment, including pencils, inks, typewriter ribbons, special papers (including gummed and perforated label paper), etc.

Verifax

Theory. The Verifax process, which was developed by the Eastman Kodak Co., may be regarded as a derivative, or a variant, of photocopying. The notable differences are that it can make copies on non-sensitized papers, and that a number of copies can be made from one exposure.

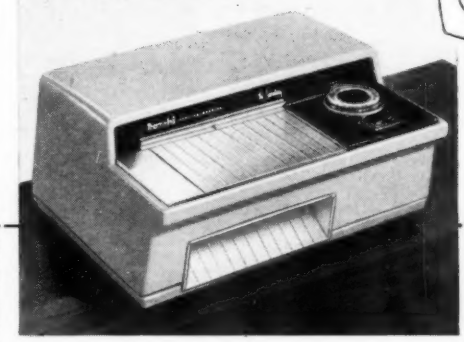
The original material is placed face to face with a sheet of sensitized paper which is called a "matrix." These are then exposed to a light source in which the light passes through the copy paper to the original. Up to this point, the process corresponds directly



...the simplest copy method of all

In and out in 4 seconds. That's All-Electric copying speed and simplicity. And it's yours only in "Thermo-Fax" Copying Machines. This exclusive dry copying process *eliminates all chemicals and negatives*. You make quick copies by electricity alone for as little as 5¢ per copy. You get more facts faster, make faster decisions. Try it on letters, records, invoices, reports or other business information in your own office. See how much time and money All-Electric copying simplicity can save for you. Send coupon for details now.

"Secretary" Copying Machine ... copies legal or letterhead size papers in just 4 seconds.



Thermo-Fax® BRAND COPYING PRODUCTS

PRODUCT OF 3M COMPANY RESEARCH

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to the reflex method of exposure in standard photocopying. As in that method, the light areas of the original material reflect light to the matrix, while the dark areas absorb the light.

The matrix is light-sensitive, and wherever the reflected light strikes it a chemical reaction occurs. After the sheets have been exposed, they are removed, and the matrix is placed in the developing section of the unit. Here it is processed by an "activator" solution.

The areas affected by light have become inactivated as far as their powers to produce a dye are concerned, but those areas on the matrix corresponding to the dark lines of the original now react to form a dark, dye-like substance. This material can be transferred to a final copy sheet.

As the matrix is removed from the developing unit, a sheet of non-sensitized copy paper is placed against it, face to face. The two sheets are pressed together by squeegee rollers, and as a result, a layer of the dye is transferred to the copy paper, making a final copy.

The chemical procedures employed produce a sufficient quantity of dye that several copies can be made from one matrix. The number can be varied; by accepting lighter copies, more copies can be had. In general, the process is considered suitable for making from three to as many as ten, depending on the care that is used.

The final copy paper does not pass through a solution, so that it emerges dry.

The Verifax process, since it uses a reflex method, can copy two-sided and opaque originals without an intermediate step. Since flat-bed printers are used, bound material can be copied directly.

Like photocopying, it responds to a wide range of colors, and it can copy art work, letterheads, typed, drawn, and hand-written copy, and coarse-screen photographic halftones. Copies can be made on card stock, and the final copies can be two-sided if desired. The process can also make offset masters, using an inexpensive accessory unit.

Characteristics. Normal copies are black on white, but paper of any color can be used. When several copies are made from one matrix, each successive copy is slightly weaker than the preceding one.

The process does not allow for enlarging or reducing.

The first copy can be made in about 50 seconds, but additional copies can be made quickly. It is considered that three copies can be made in a minute.

Per copy costs vary with the number of copies made from one matrix, since the copy paper is inexpensive. A single letter-size copy costs about 9 cents, while a single legal-size copy costs about 12 cents. Additional copies cost about one-quarter or one-third of a cent each, depending on whether they are letter or legal size.

The Manufacturers

Eastman Kodak Co., 343 State St., Rochester 4, N. Y. Eastman's Verifax line includes a letter-size and a legal-size model, and, in addition, a lower-priced version called the Signet. Also offered are adapters for making offset plates for use on offset duplicating equipment.

Photostat Corp., 1001 Jefferson Rd., Rochester 3, N. Y. Photostat manufactures the Photostat Instant Copier, which can handle material up to 8½ by 14 in. in size, and which can be fitted with an adapting unit for making offset plates. In addition, the company distributes Eastman's line of Verifax Copiers, including the Signet.

Polychrome Corp., 2 Ashburton Ave., Yonkers 2, N. Y. Polychrome, in addition to offering supplies for use in offset duplicating, has made an adapter unit by which offset plates can be made with the Verifax process.

Recordak Corp., 415 Madison Ave., New York 22. Recordak is a distributor of Eastman Kodak's Verifax line.

Xerography

Theory. The xerographic process makes use of the fundamental principle that like electrical charges repel each other while unlike charges attract. To put this principle to work, the following procedure is employed:

The material to be copied is placed in a camera and a light directed onto it in such a way that its image is projected onto a coated plate. This plate has previously been given a positive electrical charge.

Next Month:
Filing Equipment
Office Safes

Wherever light falls on the plate the charge is canceled. Thus, the light, which is reflected only by the white areas of the original, eliminates the electrical charge in all areas except those corresponding to the dark lines of the original. The image has been copied, so to speak, in the form of an invisible electrical charge.

The plate is then removed from the camera and placed in a developing tray. A dark resinous powder, which carries a negative electrical charge, is passed over it. Because unlike charges attract, the powder adheres to the charged areas of the plate. The image thus becomes visible.

A sheet of paper, which has been given a positive charge, is then placed over the plate. Because its charge is of sufficient strength, the powder is attracted to the paper. (In some cases, in which it is desired to make more than one copy, only a portion of the powder is removed at a time.)

The paper is then placed in a "fuser." Here it is subjected briefly to heat, which fuses the powder and embeds it firmly in the paper, producing a permanent copy. It is possible to make as many as eight copies from one charge of powder.

Among the copies produced in this manner (and this may be done at the same time that paper copies are made) can be an offset master. Thus, materials of all kinds, including written, printed, drawn, and photographic material, can be transferred to an offset master for long runs on office offset duplicators. In addition to paper masters, it is possible to make presensitized, positive-working, metal offset plates.

The xerographic process can also produce spirit masters and translucent copies for use with diazo process equipment.

Original material can be opaque and two-sided, since the optical system employs an image reflected from the original material.

Characteristics. While single copies are usually black on white, paper color can be varied. Card stock can be used, as well as many weights of copy paper. The process can turn out work of high quality. It is sensitive to a wide range of colors.

Some cameras make same-size copies; others can enlarge and reduce. Single copies require about three minutes' time.

What would your secretary say?

JOIN the cheering section—get your secretary to enter Kodak's easy "Tell the boss" contest. All she has to do is answer the question above.

Aside from the fact that the prizes are plentiful and well worth shooting for, you and your secretary will find this contest educational. For what boss wouldn't like to learn how he can skip hours of paper work? And what secretary wouldn't be happier with far less typing?

A Kodak Verifax Copier makes 101 short cuts possible—like answering half the mail without dictation or typing... doing away with "I quote" memos . . . copying "all day" retyping jobs in 20 minutes.

Does more. This completely different copier makes 5 copies of anything in 1 minute for only 2½¢ each. Makes copies on paper, card stock, office forms. Even makes "masters" for offset and whiteprint machines.

Costs less. Priced as low as $148.

Misses nothing. Verifax copies are photo-exact from top to bottom.

Have your secretary pick up extra entry blanks and free copy of amusing Don Herold booklet on Verifax short cuts at nearest Verifax dealer. (See "yellow pages" under "photo-copying equipment.")

VERIFAX SIGNET COPIER only $148

Price shown is manufacturer's suggested price and subject to change without notice.

101 BIG PRIZES FOR SECRETARIES

PLUS 101 PRIZES FOR BOSSES

FIRST PRIZE for secretaries—*2-week, all-expense vacation for you and guest in either Miami Beach, Hollywood or New York.*

Choose Miami Beach and you'll stay at the fabulous Fontainebleau... Hollywood—the swank Beverly Hilton . . . New York—the world-famous Waldorf-Astoria. You'll enjoy superb cuisine, tops in entertainment, go everywhere, see everything—no end to thrills!

NOTHING TO BUY . . . SIMPLE RULES

1. You must be employed as a secretary, stenographer, or typist in the United States, or in its territories or possessions.
2. Send in as many entries as you wish. Write plainly or print each entry on an official entry blank, such as the attached coupon or blanks obtained at Kodak Verifax dealers. All entries must be postmarked no later than December 1, 1957 and received no later than December 10, 1957.
3. Entries will be judged on originality, humor, and aptness of thought by the Reuben H. Donnelley Corp. Duplicate prizes in case of ties. Judges' decision final. Entries, contents, and ideas therein become the property of Eastman Kodak Company for any and all purposes. No entries returned. All entries must be the original work of contestants and must be submitted in their own names. Employees of Eastman Kodak Company, its direct dealers, and its advertising agencies are ineligible.
4. This contest is subject to all federal, state and local regulations. Contest winners will be notified by mail. A complete list of winners will be mailed approximately eight weeks after close of contest to any person who requests it and sends a stamped, self-addressed envelope to Eastman Kodak Company, Box 114, Mt. Vernon, N. Y.

----------MAIL COUPON TODAY. Contest closes Dec. 1, 1957----------

EASTMAN KODAK COMPANY, Box 115, Mt. Vernon 10, N. Y. 72-11

Gentlemen: I'd tell my boss:_____

_____

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(answer in 20 words or less)

Name_____ I'm employed by_____ (Name of Company)

Company's Address_____ (street) (city) (state)

Boss's name_____

Kodak

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14 High Quality COPIES of a 10 page report . . . IN 50 MINUTES! . . . each as sharp as the original

Top management in hundreds of the nation's leading industries depend upon xerography to provide the method of getting multiple copies of reports of all kinds on short notice . . . in minutes if necessary.

Copies are always sharp and clear as the original, because offset paper masters prepared by the versatile xerography process are photo-exact, no blurred copies to cause confusion or delay.

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Anything written, typed, printed, or drawn can be copied onto offset masters by xerography. Original copy may be enlarged, reduced, or copied same size. Masters for offset, spirit, or diazo process may be made from opaque originals or from copy on both sides of a sheet. Documents can be copied to the standard 8½" x 11" size for convenience and elimination of fold-over sheets.

In addition to savings in time, xerography is saving companies of all kinds from $6,000 to $250,000 a year.

Xerography is playing an important part in this new age of automation and revolutionary development in office procedures.

WRITE for proof-of-performance folders showing how xerography is saving time and thousands of dollars for companies of all kinds and sizes.

Xerography copies anything written, printed, typed, or drawn. Same, enlarged or reduced size. Copies onto all kinds of masters—paper, metal, spirit, translucent—for duplicating. Copies line and halftone subjects.

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57-89X Haloid Street, Rochester 3, N. Y.
Branch offices in principal U.S. cities and Toronto

HALOID XEROX®

The copies are completely dry, since no solution is used.

Per copy costs are estimated at 9 cents for single paper copies, about 12 cents for paper offset masters.

The Manufacturer

The Haloid Co., 2-20 Haloid St., Rochester 3, N. Y. XeroX line includes cameras, fusers, processors, and accessories. Cameras, depending on the model, can make same-size copies, or can enlarge and reduce. Single copies can be made, but the equipment is especially suitable for making offset masters. Accessories include units for making these plates and for making spirit masters, a "tone tray" for copying halftone and line subjects, and an easel attachment for the enlarging camera. The Automatic Copyflo Continuous Printer uses the xerographic method to reproduce material from original documents or from roll microfilm at a rate of 20 linear feet a minute.

The Duplicating Processes

Gelatin

Theory. The gelatin process is one of the two popular methods employing aniline dyes, the other being the spirit process. Both methods are sometimes referred to as "hectograph," the spirit method being distinguished as "liquid hectograph."

Chemically, the two methods are very similar, but they differ in the mechanical arrangements employed.

To make copies, it is first necessary to prepare a "master." This is accomplished by typing, writing, or drawing directly onto the master sheet, provided a hectograph ink, crayon, or ribbon is used. A similar result may be obtained by writing, drawing, or typing through a hectograph carbon, which is placed face down on top of the master. (This contrasts with the method of typing with a carbon face up under the master, as is necessary when preparing a spirit master.)

As a result of the pressures applied by the writing instrument, a right-reading copy has been made on the master in the form of deposits of aniline dye. The master is then placed face down on a flat gelatin surface and left there for about 40 seconds.

As a result of this contact, the dye is transferred to the gelatin, where the copy now appears reversed.

This gelatin surface now has become, in effect, a new master, for copies are made directly from it. Copy paper is pressed against it, one sheet at a time, and as a result of each contact a thin layer of dye is removed from the gelatin to make a right-reading copy.

The gelatin normally takes enough dye from the original master to make from 50 to 100 copies. The first copies are the darkest, and each successive copy is fainter than its predecessors. One characteristic of the gelatin surface is that the dye gradually sinks into it if it is not used immediately. The gelatin can be used again after a period of hours.

This process permits the simplest and least expensive of mechanical arrangements. In some cases the gelatin surface is merely stretched across the flat bed of a tray-type machine. Paper is then laid on it, one sheet at a time. Various mechanical arrangements are possible to facilitate the contact with the paper. In such a machine, the

gelatin may be in roll form, so that it can be advanced to permit use of a new master without having to wait for the excess dye to be absorbed.

Some machines have a rotary mechanism, permitting the gelatin to be wrapped around a rotating drum. Copy paper is then fed into the machine as the drum rotates.

Characteristics. Copies are usually made on a high-finish paper in a purple dye. Dyes of other colors can be used, but purple has been found to produce the sharpest copies and the longest runs. Any number of colors can be used on a single master; to vary the colors, it is only necessary to change the carbon or use a different ink, pencil, or crayon.

It is generally considered that at least 50 copies can be made from the average master, and that 100 are possible if care is used. The process is extremely inexpensive, taking into account not only the cost of supplies, but also the cost of the equipment itself. Per copy costs are measurable in small fractions of a cent.

Speed of operation varies. With a flat-bed machine, an operator can make about 10 copies a minute. A rotary machine may make as many as 75.

Even their shepherd admits he can't figure out which is which. You'll be pleasantly surprised to find out that the *last* duplicated copy looks just like the first when you use *all-new* Colitho Direct Image Paper Plates and duplicating supplies.

The secret of this greater *uniformity* is that from plate to plate, box to box and shipment to shipment, Colitho Direct Image Paper Plates are *ph Control-coated to closer tolerances than ever before.* And Colitho Etch and Fountain Solution are specially formulated to bring out the exact same sparkling appearance from every plate.

COPIES *that look alike*

Systems men and duplicator operators the country over are discovering this great new uniformity Colitho gives all their offset duplicating. For the name of your nearest Colitho supplier, write: Columbia Ribbon & Carbon Mfg. Co., Inc. Glen Cove, New York.

COLITHO OFFSET DUPLICATING PLATES AND SUPPLIES

The Manufacturers

Autocopy, Inc., 12150 *S. Peoria, Chicago.* Current information on Autocopy's line of gelatin duplicators was not available at press time.

Beck Duplicator Corp. SEE: *Autocopy, Inc.*

Columbia Ribbon & Carbon Mfg. Co., Inc., 551 *Herbhill Rd., Glen Cove, L. I., N. Y.* Columbia's gelatin machines are of the flat-bed type, manually operated. They can produce copies of letter and legal sizes. The units are portable.

Graphic Duplicator Co., 6 Halstead Ave., Harrison, N. Y. Information on current products not available at press time.

Hecto Products, Inc., 110 *W. 17 St., New York* 11. Hecto makes a line of tray-type models, manually operated, with maximum printing areas of 8½ by 14 in. Price range: $2.50 to $7.50.

The Heyer Corp., 1850 *S. Kostner Ave., Chicago* 23. The Heyer line contains a variety of models, some of which can make copies as large as 12 by 18 in. The equipment is manually operated.

Offset

Theory. The offset process, as used in office duplicating equipment, is a simplified version of the familiar printing process known as photo-offset lithography. It depends on the fundamental theory that grease and water do not mix.

A master or plate must first be prepared. Numerous means are available, but the objective of all is to type, write, or print the message in the form of greasy lines which repel water. The message is written or printed directly on the master. This can be done with a typewriter (if the ribbon has the proper characteristics), or with any writing or drawing instrument which can produce the necessary water-repellent lines.

This master is then wrapped around the rotating drum of the duplicator. As the drum rotates, several successive steps occur:

1. The master passes under a roller which applies a light film of water. This water is repelled by the greasy lines on the master but it adheres to the "white" background areas. The message has now, so to speak, been printed in greasy lines on a background of water.

2. The master then passes under an ink roller, which carries an ink of a greasy nature. This ink is repelled by the water-covered areas of the master—the background—but adheres to the greasy lines. The message may be said now to be written in ink against a water background.

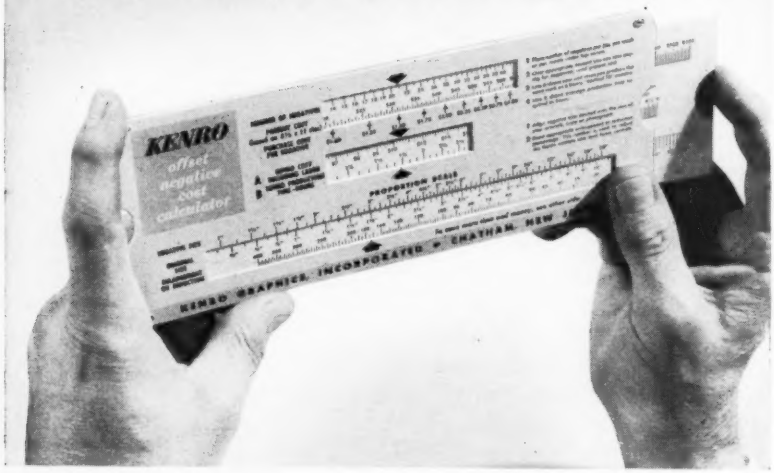
3. Although it would be possible to print directly from the master at this point, an intervening step now takes place, for technical reasons. The master instead comes into contact with a third roller, the so-called "blanket" cylinder, which is covered with a blanket of rubber. As a result of this contact, the master prints the message onto this blanket.

4. The blanket cylinder, which is itself rotating, now carries the inked message into contact with the copy paper at a point at which the paper is fed between the blanket cylinder and an impression cylinder, which presses the paper firmly into the blanket. Thus the final copy is made.

The use of the blanket cylinder makes it possible to press the ink into the paper in such a way that clear copies can be made of even such difficult materials as halftones and art work. The action of this cylinder in "offsetting" the ink image from the master to the paper is responsible for the popular name given this process.

Offset masters may be of paper, which can be handled easily in a typewriter, and in addition, a variety of materials, including aluminum and plastics, are used, depending on the method by which the master is to be prepared.

When does it pay to make your own Offset Negatives?



FREE calculator gives the answer

If you want to improve the efficiency of your offset printing operation, look into the cost of negatives. You may be wasting time and money by not making your own negatives on a Kenro "Vertical 18" camera. Free negative cost calculator shows how much you can save. Investigate how easily you can make top quality line and halftone negatives on a Kenro. Send coupon today.

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The Masterlith Offset Duplicator Standard Model 1115. Price $3150, f.o.b. factory. (Price and specifications subject to change without notice.)

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A BETTER DUPLICATOR *Masterlith*

"the offset duplicator that sets the trend"

This advanced offset duplicator, styled by Raymond Loewy and built by Whitin, sets the trend in four respects:

Ease of operation—No special skills are needed to produce offset work of high quality. The operator can change sizes and types of work quickly—without tools. Tricky adjustments (roller pressures and ink and water distribution) are handled *automatically*.

Versatility—The standard Masterlith (without "extras") is unmatched for runs of 10 or 10,000 copies, on any stock from 11-pound manifold to 2-ply card stock, in any sizes from 3 x 3 to 11 x 15 inches.

Quality Reproduction—The Masterlith is not only designed for fast, easy set-up; it's also designed to maintain professional quality throughout the run. No other office equipment of this size provides the same control of paper, the same exact balance of ink and water that make Masterlith reproduction so good.

Service—Here Masterlith sets new standards again—by way of 45 Photostat Corporation Sales and Service Offices, stocked with complete lines of offset plates and supplies, staffed with men experienced in offset duplicating—men who really give service.

The office in your city is the place to see the Masterlith. PHOTOSTAT CORPORATION Sales and Service Offices:

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Shreveport • Springfield, Mass. • St. Louis
St. Paul • Tulsa • Washington • Wichita

The Whitin Masterlith Duplicator is sold and serviced in Canada by Gestetner (Canada) Ltd., Toronto

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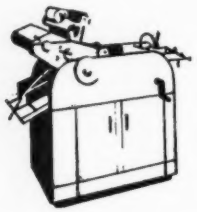
Offset masters and plates may be prepared by diazo, xerographic, photographic (including photocopying), facsimile, and Verifax methods, and many such masters can be made directly in the office. Large duplicating centers may have use for process cameras designed particularly to make offset plates.

The offset process is not only a high-speed method of multiple-copy production, but it turns out work of exceptionally high quality. It can reproduce photographs, drawings, and art work, as well as printed, typed, and written material, and it can do this in an immense variety of colors. Furthermore, the equipment is generally of precision quality and its registration is such that copies can be run through it several times to print material in new colors.

The speed of operation varies with the materials and the machine. Office



duplicators are available with a designed speed of 9,000 copies an hour. With some weights and qualities of paper and masters, optimum speeds may be somewhat lower, but speeds from 4,500 to 8,000 an hour are standard.

The process is suited to runs of as few as ten copies, using inexpensive masters. The various types of masters offer various maximum run capacities. With some types of metal plates, it may be possible to obtain well over 100,000 copies. One particular virtue of the process is that in many cases masters can be used to make new masters, so that they are, in a sense, self-perpetuating.

The equipment is not expensive to operate, although initial purchase price is high. Costs vary, of course, with the quality of materials used and the length of the run. The figures quoted for this department last year by one major manufacturer are still considered to hold for average situations: five cents for a single copy; eight cents for ten, 28 cents for a hundred, and $2.03 for a thousand.

Not only have there been new developments facilitating the preparation of masters, but new offset equipment itself has been made easier to operate. It is not as simple to operate as, say, a spirit duplicator, but today's equipment does not require the same level of skill that was formerly necessary. Relatively unskilled operators can use it. Such features as facilities for moistening the master automatically when it is first placed on the machine, automatic cleaning of blankets, automatic adjustment of roller pressures to accommodate varying weights of paper stock and masters, and automatic balancing of the ink and water mixture have been especially helpful in bringing the offset duplicator into high esteem for general office use.

The Manufacturers

Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland 17. Addressograph's Multigraph (Multilith Offset) machines (not to be confused with the company's Multigraph (Relief) machines, which are described in the Relief Process section of this department, are available in seven different models, all electrically powered, with maximum printed copy sizes from 9¾ by 13 to 17 by 19¾ in. One or two colors may be run at once, with any number of colors available. Among features offered are automatic blanket cleaning, automatic moistening of master when first placed on machine, automatic master clamp, automatic feed, facilities for numbering and perforating while printing, etc. Price range: $890 to $4,675.

Davidson Corp. (Subsidiary of Mergenthaler Linotype Co.), 29 Ryerson St., Brooklyn 5, N. Y. Davidson's Dual-Lith line includes ten models with maximum copy sizes ranging from 9¾ by 13 to 13 by 17 in. These machines are distinguished by a special design which permits them to be used for both offset and letterpress printing. A two-cylinder design is employed in which the main cylinder is twice the size of the blanket cylinder. Thus, it rotates only once for each two rotations of the blanket cylinder. The latter picks up the ink image on its first rotation (of each two successive rotations), and on the second it prints the image on the copy paper as it passes between the two cylinders. The main cylinder is used as both master and impression cylinder. Features offered include automatic blanket cleaning, automatic suction feed, continuous chain gripper delivery, ability to print two sides simultaneously, capacity for embossing (Dav-engraving) and for letterpress, and facilities for numbering and perforating. When used for letterpress work, the equipment can print from type, slugs, rubber plates, etc. Price range: $1,757 to $5,548.

A. B. Dick Co., 5700 W. Touhy Ave., Chicago 31. The Dick offset duplicator is designed to operate at speeds up to 9,000 copies an hour. It is electrically powered, has maximum printing area of 9½ by 13 in., and features Aquamatic control for assuring the proper balance between ink and fountain solution. Among other features are self-adjusting cylinders which allow automatically for differences in paper weight or master thickness; a universal master clamp for masters with slotted, serrated, and straight edges; counter; and a device to disengage the blanket cylinder from the master cylinder should paper cease feeding. Price: $2,750.

Ditto, Inc., 6800 McCormick Rd., Chicago 45. Ditto offers one offset duplicator, which is electrically powered. Maximum printing area is 14 by 10¾ in. Designed optimum operating speed is 8,000 an hour. All controls are on a single keyboard at the front of the machine; controls are designed to be easy to operate. Features include automatic adjustment of paper feed to varying weights of paper, a device to stop inking and moistening should paper feed cease, and automatic control of inking and moistening. Using an automatic unit, the desired number of copies can be set on a regulator, and the machine performs the complete printing operation without further human control, turning itself off when the run is complete. Price: $2,395.

Harris-Seybold Co., Div. of Harris-Intertype Corp., 4510 E. 71 St., Cleveland 5. Harris-Seybold is a manufacturer of large offset presses of the professional type. However, its small offset job presses, which handle 14½ by 20½ in. sheets, may be used in offices large enough to prepare their own business forms, letterheads, and other materials.

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the Readers' Inquiry Coupon on page 102.

1 "My hands used to look like this every time I typed a duplicating master."

2 "Then one day the boss asked me to try Azograph . . . said he wanted to see if these new masters really were clean. So what, I thought."

3 "I typed the master the same way I always did."

4 "I made corrections the same way and expected the same mess."

5 "BUT WAS I SURPRISED!"

6 "My hands were clean. My clothes were clean. My desk was clean. No smudge, no smear, no stain."

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Photostat Corp., 1001 *Jefferson Rd., Rochester* 3, *N. Y.* Photostat offers the Whitin Masterlith Offset Duplicator. Features include automatic suction-type feeder, counter, removable automatic ink unit, double sheet detector, variable speeds (3,400 to 7,200), left and right hand conveyor joggers, static eliminator, simplified controls, and other refinements. Maximum paper size: 11 by 15½; the unit can handle paper as small as 3 by 3 in.

Whitin Machine Works. SEE: *Photostat Corp.* (Photostat handles the Whitin offset duplicator.)

Relief

Theory. The relief process employs the principle of printing from raised, or embossed, type. The principle is ancient in origin. It is the principle used in typewriters, in wood cuts, in rubber hand stamps, and in printing from lead slugs. It is the principle represented by the letterpress method, by which this magazine is printed.

It is possible to print directly from raised type, by inking it and then pressing the type against the copy paper, or by stamping the image through a ribbon (such as a typewriter ribbon) placed between the type and the paper.

Office duplicators using the relief principle have long been known as "multigraphs," after a trade name owned by the Addressograph-Multigraph Corp. Since that company makes both relief process equipment and offset duplicators (which it describes as "Multiliths"), the term "multigraph" is not necessarily definitive for those not working in the field unless the company's further description "relief process" is also employed.

The two processes are totally different, of course, in theory. Whereas the offset method employs an absolutely flat-surfaced (planographic) master, the relief process depends on embossed type.

Office equipment using the relief process generally prints from raised metal type which is set, by hand, into channels on either a rotating drum or a flat printing head, depending on the design of the equipment. The rotating drum type is more familiar in the office, except for small units designed primarily for printing tags, labels, and other small items.

The type may be inked directly, or covered with a wide ribbon somewhat like that used on a typewriter. The copy paper is then fed between the type (or the ribbon-covered type) and an impression surface, which in the case of a rotary machine is an impression cylinder.

In addition, rubber plates, electrotypes, slugs, signature plates, and other forms of type may be used.

Characteristics. If the ribbon is used, the resulting impressions very closely resemble typewriting. For this reason, relief process machines are often used to prepare letters in which items such as names and addresses are later to be filled in; it provides a very close match between the two methods of printing, so that the fact that the letter has been filled in may be detectable only by the closest examination.

If the ribbon is not used, copies made from the inked type have the qualities obtainable from standard letterpress printing.

Whichever method is used, the process can turn out work of exceptionally high quality. Because of the durability of the type, runs can be made into the hundreds of thousands. In fact, the process is especially suited for long runs because typesetting is a slow operation and is hardly worth while for short runs. Average speeds of 6,000 copies an hour may be expected.

However, the type can be changed during a run, so that the relief method is ideal for printing materials with variable items, such as price lists.

After the type has been set, duplicating costs are low. Addressograph-Multigraph suggests a cost of $1.86 for a thousand copies under standard conditions, which brings the per copy cost to less than a fifth of a cent. Variations in paper quality, of course, provide variations in costs.

Any color of paper can be used, and the color possibilities in the actual printing are limited only by the variety of inks and/or ribbons available. The equipment is generally quite accurate in registration (varying with the model), and it is usually possible to make accurate re-runs in new colors.

The Manufacturers

Addressograph-Multigraph Corp., 1200 *Babbitt Rd., Cleveland* 17. The Addressograph line of Multigraph machines (as distinguished from the company's Multilith machines, which operate on the offset principle and are described in that section of this department), use raised type. Seven electric models are offered, together with one manual machine. Maximum sizes of printed area range from 8 by 12½ to 16 by 20 in. An unlimited number of printing colors can be used, which may be run one at a time. Features available permit machines to number and/or perforate while printing. Automatic feed is offered. Price range: $280 to $3,185.

American Tag Co., 6200 *S. State St., Chicago* 21. This company has made a small, specialized, relief-type machine called the Jiffy Print, used for printing tags and labels. Current details were not available at press time.

Davidson Corp. (*Subsidiary of Mergenthaler Linotype Co.*, 29 *Ryerson St., Brooklyn* 5, *N. Y.* The Dual-Lith line contains ten models which can be used for either offset or letterpress printing. (See description under "Offset.") Elements of the master cylinder can be changed so that the equipment can print from type, plates, slugs, etc. Price range: $1,757 to $5,548.

A. Kimball Co., 444 *Fourth Ave., New York* 16. Kimball offers small rotary-type models which print from type, metal logotypes, and rubber mats.

Special Liquid

For the last two years, this department's review of duplicating processes has listed the Azograph process (made by the A. B. Dick Co.) and the Chemograph process (made by Ditto, Inc.) as a separate but related pair of processes. The introduction this year of the Transograph process (by Columbia Ribbon & Carbon Mfg. Co., Inc.) adds another to this group, for while it is not identical to either of the other processes, it is designed to accomplish much the same purpose—the preparation of copies by a method sufficiently like standard spirit duplication to offer the ease and simplicity of that process but at the same time providing a means of overcoming the biggest inherent disadvantage of the spirit process—its stain hazard.

Azograph and Chemograph use azo dyes and are chemically quite different from the spirit process, which uses aniline dyes. Columbia Ribbon refers to the Transograph process as a "completely new spirit duplicating process," but it was not possible to obtain technical details before press deadline.

The essential secret of all three methods, however, is in preventing the formation of the printing dyes until the master is placed on the duplicator

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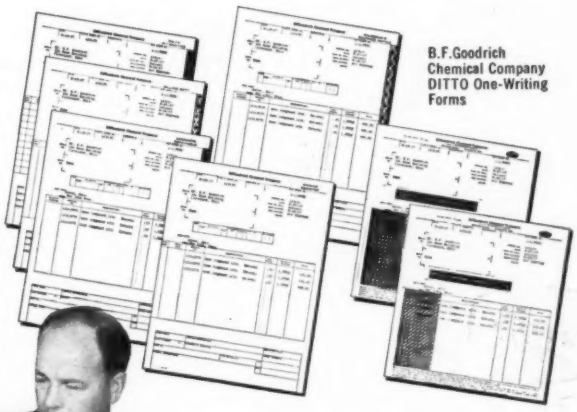

B.F.Goodrich Chemical Company DITTO One-Writing Forms

B.F.Goodrich Chemical Company Sales Operating Manager, Robert C. McPeak; Manager Office Services, Robert J. Uebbing; and Supervisor of Billing Eugene P. Eakin, discuss DITTO I.D.P. One-Writing Order Invoice System with Joseph Meagher, DITTO Branch Manager.

DITTO, Inc., 6834 McCormick Road, Chicago 45, Illinois

Ditto of Canada, Ltd., Toronto, Ontario

Ditto (Britain) Ltd., 126/128 New Kings Rd., Fulham, London, S. W. 6, England

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and the copy paper is fed into the machine.

In the case of Azograph and Chemograph, this is accomplished by separating two chemical agents so that they do not react to form a dye until they meet within the machine. The masters used are prepared by typing or drawing, with a special sheet (known as an Azograph transfer sheet or a Chemograph carbon respectively) placed face up underneath. These take the place of the conventional purple carbon used in the spirit process.

Mechanically the method is much like the spirit process. The master is wrapped around the rotating drum of the machine. But, as it is moistened, the chemical agents are exposed to each other, forming a printing dye. This dye then prints onto the paper, producing the final copies.

Transograph uses Transograph Transfer Sets to prepare masters. While the details were not available, it is evident that this process also provides for the creation of printing dyes within the machine. These masters are available in a variety of forms, including continuous forms.

Thus, all three methods solve the staining problem by not exposing the dyes to the operator's touch.

Characteristics. These processes are essentially intended for the same type of work for which spirit duplication is used. In general, they sacrifice length of run for cleanliness of operation, it being considered that standard runs will not exceed 100 copies by any great margin. The Azograph process prints in blue, Chemograph in a deep blue-black, and Transograph in a deep shade resembling Chemograph.

As with the spirit process, copies become fainter as the run progresses and the quantity of dye on the master decreases. The equipment operates at speeds about comparable to those of the spirit process.

In many cases the same equipment may be used for both the spirit process and one of the new methods. Azograph duplicators, for example, handle the spirit process without alteration; older spirit duplicators, however, do not necessarily handle Azograph. A similar situation exists with respect to Chemograph; Ditto reports that its existing spirit duplicators are easily modified to handle Chemograph. Columbia states that existing spirit equipment is suitable for use with Transograph.

The Manufacturers

Columbia Ribbon & Carbon Mfg. Co., Inc., 551 Herbhill Rd., Glen Cove, L. I., N. Y. Columbia's new Transograph Process makes use of standard spirit duplicating equipment, but the use of special masters eliminates the problem of stain inherent in spirit duplicating. Transograph Transfer Sets may be prepared in all the methods used for preparing spirit masters. They are available in continuous form for special applications as well as in sheet form. The "cleanliness" of the process arises from the fact that the dyes used to print are not found in the original transfer set. When the "master" sheet passes through the machine, a localized chemical reaction occurs to produce the dyes. The company, while it does not produce the duplicating equipment itself, does provide the Transfer Sets required for the process.

A. B. Dick Co., 5700 Touhy Ave., Chicago 31. The Azograph line includes three electric and two manual models, any of which can also be used for spirit process duplicating. Maximum printing area ranges from 8½ by 11 to 11 by 13½ in. Copies are printed in a deep blue; white paper is preferable but other colors are available. One model, which may be operated from a seated position, is designed for systems work. An optional feature is single cycle feeding, in which the machine stops in the correct position for feeding after printing the previous copy. Price range: $210 to $592.

Ditto, Inc., 6800 McCormick Rd., Chicago 45. Ditto's Chemograph process produces copies that are nearly black; white paper is normally used. Manual and electric machines are offered. These are identical, with only minor alterations which can be made easily if desired, to the company's spirit process duplicators. Electric machines feature automatic feed and counter. A systems model is included in the line.

Spirit

Theory. The spirit process is one of the most familiar of the office duplicating processes. It is sometimes referred to as the "fluid," "liquid," or "liquid hectograph" process. The name "spirit" refers to the fact that it uses alcohol as a solvent for the aniline dyes employed for printing.

Chemically it is identical to the gelatin process described above, but it differs in its mechanical aspects.

A master must be prepared. In order to do this a special sheet of paper is used, a special carbon being placed face up under it. Writing, drawing, or typing on the master causes deposits of dye from the carbon to be transferred to the back of the master.

This master is placed around the rotating drum of the duplicator. (Some simpler forms of duplicators use a tray on which the master is placed flat.) As the drum rotates, a sheet of glossy copy paper is fed into the machine. As it enters, it is moistened slightly with a solution containing alcohol. This solution serves as a solvent, and it acts to remove a thin layer of dye from the reverse of the master, so that it is deposited on the copy paper to make the final copy.

Masters may be prepared by hand, typewriter, standard printing methods, xerography, and facsimile.

Some spirit duplicators are designed specifically for systems work. Features particularly intended for this type of use include facilities for operation from a seated position, single-cycle operation (so that different kinds of forms can be printed from the same master, with some information being added or deleted as necessary), and the actual facilities for selecting and adding information.

Characteristics. Although a variety of printing colors may be had, the standard color is purple, since it usually produces the longest runs of the clearest copies. Colors are selected by choosing carbon paper of the appropriate color; a variety of colors may be used on one master simply by changing the carbon paper. The copy paper may be of almost any color.

As with the gelatin process, the first copies are the strongest, and each copy is slightly fainter than the one before. However, if a master has been properly prepared, it is possible to obtain several hundred copies in one run.

Operating speeds vary. Some equipment may be able to turn out 200 copies a minute. However, speed of operation has an effect on copy quality, and it is necessary to adjust speeds accordingly. Speeds of from 80 to 120 a minute are generally considered standard. Manually operated equipment is designed to produce copies at speeds of from 40 to 60 copies a minute.

The process is inexpensive, with the cost per copy decreasing as the length of the run increases. It is generally considered that a run of 100 copies will cost between 35 and 50 cents.

The Manufacturers

Bohn Duplicator Corp., 444 *Fourth Ave., New York* 16. BDC duplicators, taking copy to 9 by 14 in., are of the manual type.

Columbia Ribbon & Carbon Mfg. Co., Inc., 551 *Herbhill Rd., Glen Cove, L. I., N. Y.* Columbia has recently introduced a new process called Transograph which uses standard spirit duplicating equipment, but which is designed to be clean to the touch, the dyes not being formed until the master passes through the machine. It is described in the section entitled "Special Liquid Processes."

Copy-Plus, Inc., 2817 *W. Carmen Ave., Milwaukee* 9. Copy-Plus offers four electric and eight manual machines. The Ambassador line can print a copy area of 14 by 17 in.; other models have maximum area of 9 by 17 in. Price range: $146.48 to $469.48.

A. B. Dick Co., 5700 *W. Touhy Ave., Chicago* 31. Dick offers three electric and two manual spirit duplicators, which can be used interchangeably with the Azograph process. Maximum printing areas, depending on the model, range from 8½ by 11 to 11 by 13½ in. One model is designed for control by a seated operator, and may be used for systems work. Price range: $210 to $592.

Ditto, Inc., 6800 *McCormick Rd., Chicago* 45. Ditto offers four electric and three manual models of spirit duplicators. Maximum printing areas, depending on the model, range from 9 by 14 to 18 by 14 in. Features available include automatic feed, liquid and pressure controls, etc. Systems models can be operated from a seated position; pushbutton control permits shifting from continuous to intermittent feeding; segmented master clamp is used for masters and variable masters. Equipment can be easily adapted for use with the Chemograph process, described in this department under the heading "Special Liquid Processes." Price range: $228.98 to $1,325.93.

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Chicago 10. Duplicopy offers three manual machines, ranging from a small model with a 4 by 7 in. printing area to a letter-size machine. Features include single roller moistening (not using a wick). Price range: $34.50 to $203.50.

Du Prints, Inc., 1502 *S. Main St., Los Angeles* 15. The Rena line, which contains a number of spirit-process addressing machines, includes flat-bed duplicating equipment in which copy paper is laid flat across the master to make the copies.

Hart Mfg. Co., 2400 *Endicott St., St. Paul* 14, *Minn.* Current information not available at press time.

The Heyer Corp., 1850 *S. Kostner Ave., Chicago* 23. Heyer offers a line of Conqueror duplicators, including both manual and electric models. 1957 models introduced a feed drive mechanism which works only in a forward direction. Other features include counter, and visible fluid supply.

Master Addresser Co., 6500 *W. Lake St., Minneapolis* 16. This company, which manufactures a line of spirit process addressing equipment, also offers portable duplicators of the flat-bed type, including postcard printers.

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the Readers' Inquiry Coupon on page 102.

Price range: $11.95 to $63.60.

Old Town Corp., 345 *Madison Ave., New York*. The Old Town line includes both manual and electric duplicators. The new Model 10, a manual machine, features the use of two levers for controlling all functions. The Copy Lever controls pressure, fluid feed, and moistening of rollers, while the Paper Lever governs paper feed, master clamp, and moistening wick.

Rex-O-Graph Div., General Binding Corp., 7840 *W. Hicks St., Milwaukee* 14. The Rex-O-Graph line includes both manual and electric machines. Among these are systems models. Features available in systems machines include a type of fluid control through a constant flow tank from a throw-away container, foot pedal control, and magnetic blockout slot.

Rex-Rotary Distributing Corp., 387 *Fourth Ave., New York* 16. Rex-Rotary offers the Fordigraph line, consisting of two manual models printing copies to sizes of 8½ by 13½ in. The machines are portable, and are equipped with handles for the purpose; feeding and receiving tray fold up to make a case. Features include automatic paper feed, exchangeable fluid container, and automatic master clamp. Price: $157.94.

Speedliner Co., 4404 *Ravenswood Ave., Chicago* 40. Speedliner offers one manual machine capable of printing copy to 8½ by 14 in. in size. Price: $84.50.

Standard Duplicating Machines Corp., 1935 *Parkway, Everett* 49, *Mass.* Standard's line includes both manual and electric duplicators, some with a printing capacity as large as 14 by 18 in. Manual and automatic feeds are used, depending on the model.

Vari-Color Duplicator Co., 435-437 *S. Lincoln St., Shawnee, Okla.* Two manual models are offered, capable of printing copy in sizes to 9 by 15 in. Among features offered are automatic feed and automatic stop. Price range: $76.50 to $99.50.

Visirecord, Inc., Copiague, L. I., N. Y. Visirecord offers several small hand models which use the spirit principle for addressing and printing labels and other small items.

Wolber Duplicator & Supply Co., 1201 *Cortland St., Chicago* 14. The Copy-Rite line includes one electric and three manual machines, capable of printing copy to 8½ by 14 in. in size. Features available include automatic feed, automatic reset counter, automatic fluid control, a special-quality roller moistening system, and a "Margi-set" feature for raising and lowering copy while operating. The new Silver Streak also features single lever control governing roller position, fluid flow, and tank cover. Price range: $167.74 to $370.47.

Stencil

The stencil process, long known as the "mimeograph" process after the trade name used by the A. B. Dick Co., which had much to do with developing it, is perhaps the best known office duplicating method.

A stencil, basically, is a sheet of paper, plastic, metal, or other material, in which holes have been punched for the purpose of allowing ink or some other printing liquid to pass in order to create a design on a paper or other material beneath. The design printed,

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of course, is that made by the pattern of the holes in the stencil.

Inasmuch as it is necessary to support the centers of such letters as "o" and "b", conventional office stencils are designed so that letters are not cut completely through the stencil. This is provided for by the design of the stencil. Usually it has a fibrous or porous base through which ink can easily pass. This is covered with a waxy coating which prevents the passage of ink until holes have been cut in it.

The actual cutting of holes consists of pushing aside the coating. The fibrous base remains uncut as a support for the entire structure of the stencil.

Stencils may be prepared by hand, by typewriter, by printing with dies, or by such means as the facsimile and photochemical processes. In one case, at least, they may be made by brushing certain chemicals onto the stencil.

The stencil is wrapped around the rotating drum of the duplicator, or, if a twin-cylinder machine is used, around the screen (of silk or other material) which encloses the two cylinders.

Ink is supplied from within—through perforations of the drum, or through a process which inks the inside of the screen. At each revolution of the drum (or each cycle of the stencil on the twin-cylinder model), a sheet of paper is fed into the machine and into contact with the stencil. Ink passes through the stencil to the copy paper to make the final copy.

Some machines, especially of the twin-cylinder type, use ink in paste form. It is carried in tubes and is cleaner to use.

Characteristics. Copies may be made on paper of any color and in ink of any color. While most machines print only one color at a time, it is possible in some cases to print more than one color at once. The copy paper is usually rough, chiefly because of the need to absorb the ink quickly so that successive copies do not smear it. (Slip-sheeting, of course, is one means of preventing smearing.) However, the newer quick-drying inks also help, making it possible to use better grades of paper at higher speeds.

The equipment can operate at speeds of 180 to 240 copies a minute, if power models are used. Manual models run at speeds varying from about 60 to 100 a minute. Costs vary with the length of the run, decreasing as the run increases. It is generally considered that a typical run of 100 costs between 35 and 40 cents, runs of 1,000 about $2.40.

If a stencil is properly prepared, it should be able to give several thousand copies, provided a good material was used to begin with. If special stencils are used, much longer runs are possible.

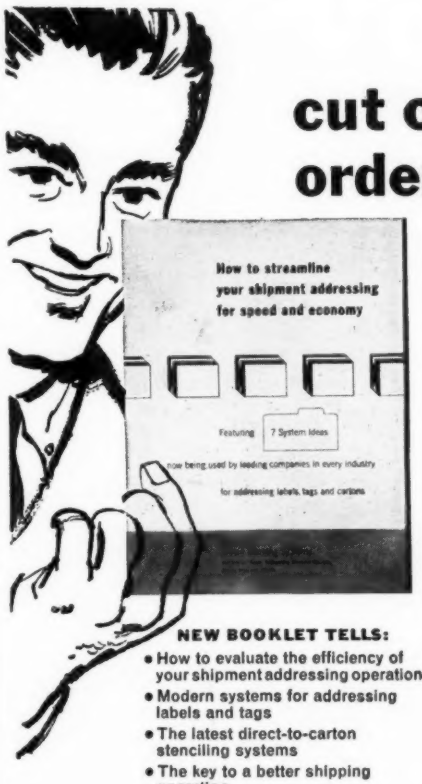
The Manufacturers

Addo-X Inc., 300 Park Ave., New York 22. The Roneo line includes both manual and electric models. Maximum copy sizes range from 8¼ by 13 to 16¾ by 13 in. Ten printing colors can be run, one at a time; estimated time for color change is 20 sec. Electric machines have motor in head so that cabinet is not required, although it is available. Available is counter which shuts off machine after required run has been made. Price range: $230 to $700. Also offered is Roneo-Tronic stencil cutter, operating on the facsimile principle.

Autocopy, Inc., 12150 S. Peoria, Chicago. Autocopy has made a line of stencil duplicators, current information on which was not available at press time.

Beck Duplicator Corp. SEE: *Autocopy, Inc.*

Bohn Duplicator Corp., 444 Fourth Ave., New York 16. Bohn's Rex-Rotary line includes one electric and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two manual machines, all capable of printing material up to legal size. One color can be printed at a time, but numerous colors are available. Machines are of the twin-cylinder silk screen type using paste ink; inking is automatic. Colors can be changed in three minutes. Copy can be adjusted while the machine is running. An automatic cutoff counter is one of the available features. The electric machine is priced at $295. Also offered is the Electro-Rex stencil cutter, which operates on the facsimile principle.

A. B. Dick Co., 5700 W. Touhy Ave., Chicago 31. Dick's line of Mimeographs includes three electric and two manual models. Machines can be used with either paste or fluid ink. Feed control to assure feeding of unevenly cut or stacked paper is a feature. Maximum printing area: 7¼ by 14 in. Price range: $225 to $680.

Gestetner Duplicator Corp., 216 Lake Ave., Yonkers, N. Y. Gestetner offers a line of both manual and electric stencil duplicators of the twin-cylinder silk screen type, using paste ink. Models are available to print in letter size and in larger sizes such as 16½ by 13½ in. Among the features offered are Continumatic Inking (continuous, automatic inking), and automatic feeding and counting. The equipment can print to within 1/16 in. of the edge of the paper. The company also offers the Photoscope, which uses photographic principles to prepare stencils from material previously prepared in any of a variety of ways.

Milo Harding Co., 500 S. Monterey Pass Rd., Monterey Park, Calif. This company offers Tempo and Geha equipment, both manual and electric, of the two-cylinder type using a plastic carrier screen. The equipment uses paste ink. Among the features offered are automatic interleaver for slipsheeting, automatic paper jogger, automatic dual feed, automatic predetermining counter and accuracy of registration, to permit second-color re-runs. Tracing scopes are also offered.

The Heyer Corp., 1850 S. Kostner Ave., Chicago 23. Heyer Lettergraphs are offered in a variety of manual versions, printing in sizes from post card to legal. Among available features are automatic feed, automatic inking, and continuous counter.

Marr Duplicator Co., Inc., 53 Park Place, New York 7, N. Y. The Marr line includes both electric and manual

(*To page 72*)

What's all the excitement in the front office?

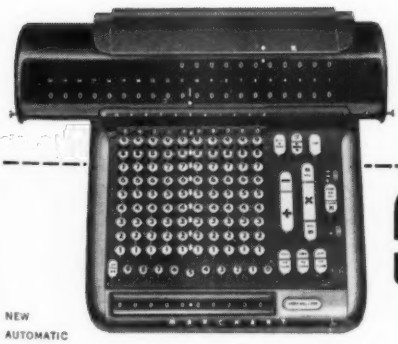
A demonstration of the amazing new Marchant Deci•Magic

. . . the calculator that ends decimal-point errors

The figure boys in this firm have every right to be excited about this new calculator that banishes decimal-point doubt, that ends decimal-point errors . . . forever.

The Marchant Deci·Magic is the world's first and only calculator to automatically set decimals in the keyboard and all dials. Touching one key one time guarantees correct decimals throughout a problem *and in the answer.*

This positive protection, plus many other exclusive advanced features, makes Deci·Magic the most accurate, the easiest calculator to use ever built. No wonder this firm's calculator users asked to see it perform on their own figurework . . . no wonder they're excited!



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Your ASE Dealer will be pleased to show you how to "clear the runway" for greater efficiency in your office.

See your ASE dealer or write for further information

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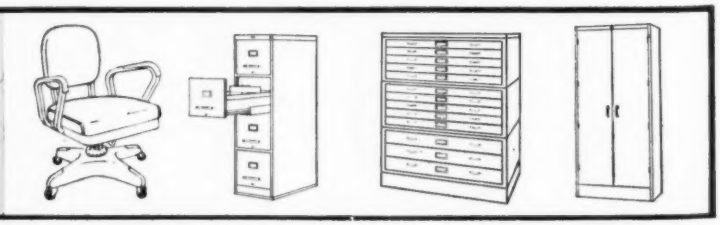

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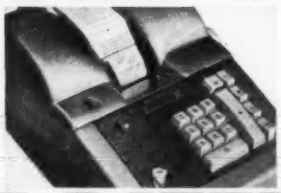
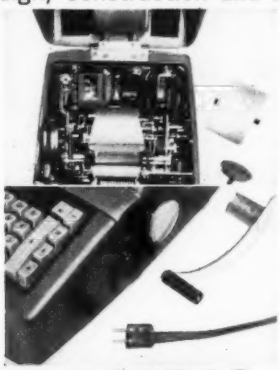


- Large Capacity "10 Key — 10 Total 11"
- Credit balance and subtraction in RED.

IT'S TOTALLY DIFFERENT!

It's Years Ahead in Design, Construction and Performance



- All parts precision made of top grade hardened steel, coated with copper and re-coated with nickel for a lifetime of trouble-free operation.
- Easy-to-get-at mechanism for cleaning and maintenance.
- Comes equipped with a separate lever to operate manually as well as electrically.

IT'S THE BRUNSVIGA ELECTRIC ADDING MACHINE

LARGE CAPACITY 10 KEY — 10 TOTAL 11

(with CREDIT BALANCE)

Unbelievably Low Priced at

$299.50 plus Fed. Tax

(Approximately **$100 less** than other machines of comparable quality)

The **BRUNSVIGA Model 111RT** brings you many quality features never before found in an adding machine at this amazingly low price. You can buy the **BRUNSVIGA** with confidence because it is built and backed by one of Western Europe's largest, oldest and most reputable manufacturers of adding and calculating machines. For proof of smooth and dependable performance, see your local dealer for a demonstration — or send coupon for name of nearest dealer.

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☐ Please send us free literature.
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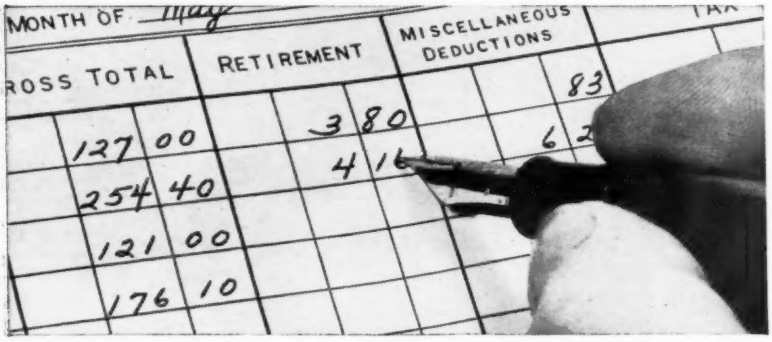
CITY _____ ZONE _____ STATE _____
DEALER'S NAME _____

Whether you make entries this way

or this way



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WHETHER you do your accounting in pen and ink or by machine, there is a specially designed Hammermill Ledger finish made for you. For bookkeeping machines, Hammermill Ledger's "Posting finish" won't slip on the platen—keeps the paper straight, entries aligned. And Hammermill Ledger's "Ledger finish" helps your bookkeepers make clean, neat figures in pen and ink, gives you records that are easy to read and to use.

Hammermill Ledger now contains Neutracel®—the exclusive pulp made by Hammermill from hardwoods. Blended with other fine pulps, Neutracel gives Hammermill Ledger a smoother, more velvety surface that helps make ruling, typing and printing crisper and clearer.

Hammermill Ledger's soft, glare-free colors reduce eye strain and fatigue, so bookkeepers can work faster and more accurately. And, you'll also be pleased with the long life and rugged strength of Hammermill Ledger. It's made to stand up under years of handling. Write now, on your business letterhead, for a free sample book. Hammermill Paper Company, 1471 East Lake Rd., Erie 6, Pa.

...yet HAMMERMILL LEDGER costs no more

—and actually less than many other watermarked ledger papers.

(*From page* 68

duplicators, with printing areas up to 7½ by 14 in. Features offered include positive single sheet feed, automatic counter which can be set to stop the machine, and non-stop loading.

Mimeo Mfg. Co., Inc., 405 Broadway, New York 13. This company offers manually operated stencil duplicators in letter and legal sizes, featuring automatic feed. While current information was not available at press time, last year's models were priced below $50.

The Multistamp Co., 521 W. 21 St., Norfolk 10, *Va.* Multistamp duplicators are of the small hand stamp or rocker type, for use with post cards or for addressing cartons.

Pekas Duplicator Co., Lock Box 306, *Lesterville, S. D.* This company offers a small handstamp model designed to print copy up to 4 by 6 in. in size. Registration is controlled by the use of an adjustable printing guide board.

The Print-O-Matic Co., Inc., 724 W. Washington Blvd., Chicago 6. Information on current products not available at press time.

Rex-Rotary Distributing Corp., 387 Fourth Ave., New York 16. The Rex-Rotary line includes three electric and five manual stencil machines, ranging from legal size to models capable of printing areas as large as 17 by 13½ in. Features include automatic feed, automatic inking, automatic stop counter, and carefully controlled registration. Price range: $307.50 to $982.50.

Rutherford Duplicator Co., P. O. Box 13087, *Houston* 19, *Tex.* Rutherford offers the Duplicard, a small stencil machine for printing postcards, labels, and other small items. Price: about $14.

The Speed-O-Matic Co., 7640 W. Norton, Hollywood, Calif. This company has made small manual duplicators of the postcard size. No information on current products was available at press time.

Speed-O-Print Corp., 1801 W. Larchmont Ave., Chicago 13. No information available at press time on current products.

Vari-Color Duplicator Co., 435-437 S. Lincoln St., Shawnee, Okla. The Vari-Color line contains four manual models with maximum copy sizes ranging from 3½ by 5¼ in. to 9 by 15 in. Features include automatic feed, reset counter, automatic inking, and

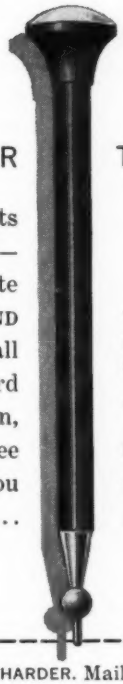
(*To page* 76)

WORK SMARTER...NOT HARDER!

Electronic Longhand

PROVES THE PEN IS MIGHTIER THAN THE PILL!

When executive nerves are wracked and budgets wrecked by delays, errors or inefficiencies in operations — don't reach for a pill, reach for an Electronic Pen — and write your own ticket to tranquility! ELECTRONIC LONGHAND instantly delivers accurate, handwritten messages to all concerned — eliminates misunderstandings ... switchboard tie-ups ... busy signals. And your orders get *fast* action, providing closer control, swifter, smoother operations. To see for yourself how ELECTRONIC LONGHAND will help you *work smarter,* not *harder* — mail this coupon today ...



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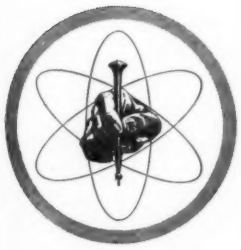

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NCR PAPER DOES IT!...produces cleaner, clearer copies

Business forms users everywhere are discovering that NCR Paper speeds up their work. Without using carbon paper or even any carbonization, this amazing paper makes perfect copies of invoices, premium notices, stock requisitions—any one of hundreds of applications where clean, clear copies are needed.

Non-smearing NCR Paper, perfected by the research laboratories of The National Cash Register Company, eliminates smudging of copies or fingers and is easy to handle because it requires no carbon inserts. Up to five legible copies can be made with a standard typewriter, ballpoint pen or pencil and eight or more with a business machine or electric typewriter.

NCR Paper is simple to use. Just put together several forms and insert them in a business machine or typewriter. Finished copies are always neat and clean, easy to read.

Have your forms printed on NCR Paper by your present forms supplier. You'll be amazed how easily it solves the problem of producing multiple copies. You'll get better, cleaner copies in less time!

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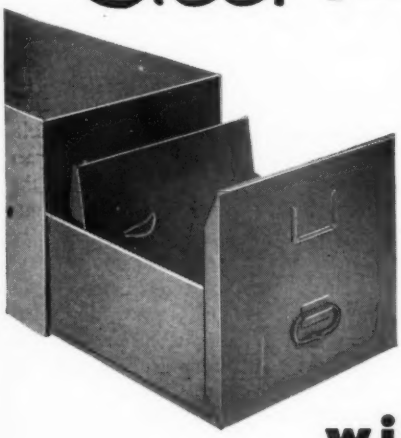
Steel yourself against storage problems!



Let the sturdiness and durability of steel end your storage problems. York STEEL Transfer files provide orderly and economical record storage . . . are built to last a life time. No more continual replacement of torn, crumbled cardboard containers stacked on shelves . . . no more exposure of valuable records to the ravages of time.

York STEEL Transfer files stack ceiling high . . . lock together . . . and save up to 50% in space. At York's low prices, steel files often cost the same or less than cardboard containers and shelving! . . . plus eliminating continual replacement of files and unnecessary rehandling of records.

Standard sizes for popular records . . . including time and tab cards . . . are available for immediate delivery. Let York Transfer files steel you against storage problems. Write today for catalogue and prices.

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City _____ Zone ___ State _____

(*From page 72*)

static eliminators. Price range: $16.95 to $99.50.

Weber Marking Systems, Weber Addressing Machine Co., Inc., 215 E. Prospect Ave., Mt. Prospect, Ill. This company offers a small manual machine, the Dual-80, for printing labels. It can print areas up to 4⅛ by 6 in. in size, and can cut labels to desired size. The machine can be quickly converted to print from a rubber mat or from a stencil.

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the Readers' Inquiry Coupon on page 102.

Paperwork—

(*From page 39*)

uments contained the required information. . . . In a similar manner other documents were judged vital to basic functions in each area."

Plans were also worked out for adequate records protection plans, he said. Four distinct methods were used, including the removal of original and duplicate material to a vital records center.

There is a "considerable shortage" of personnel qualified to administer paperwork control programs, Albert Pleydell, vice president and treasurer of Management Services Associates, reported to the audience. Three likely sources for trained manpower, he declared, are one's own organization; an outside organization with a developed program, such as a government agency; and consulting services. In relating administration to the problem of holding in check the rate at which records are created, he emphasized that any effective program must have complete "Topside" support. He endorsed a concept of including the entire field of paperwork in such a program, a technique which he offered as "new and not yet widely accepted."

People — being people — can sometimes throw the best organized systems out of kilter, Mr. Pleydell warned. With inadequate programming or lack of supervision, workers will almost invariably improvise on-the-job modifications of established procedures, he declared.

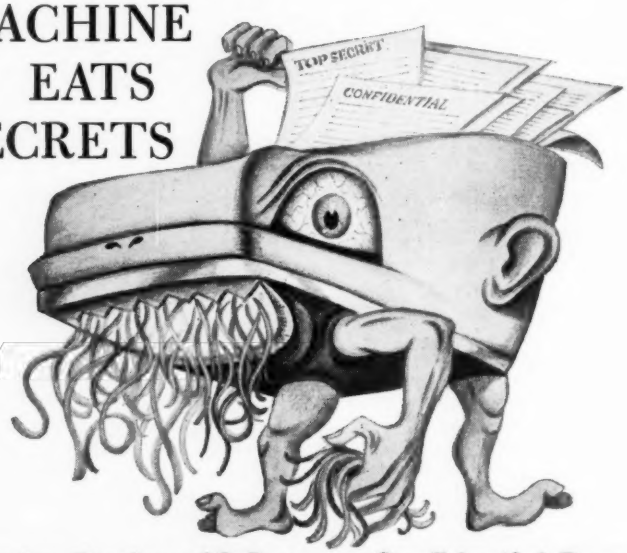
Business should think in terms of disaster preparedness and emergency planning as a part of everything it does, Virgil L. Couch, industry office director of the Federal Civil Defense Administration, warned the group in a luncheon address. The National Records Management Council, as the top organization in the field, he suggested, might well create a Disaster Preparedness Committee to offer assistance in the preservation of vital documents.

In discussing preparation for survival, Mr. Couch declared:

"In general, an industrial plant, institution, or other large facility is capable of organizing for its own self-protection if fifty or more employees or occupants are regularly within the facility, if such employees or occupants can perform adequate emergency duties without the necessity for recruitment of other volunteers, and if management is available to provide leadership and chain of command for emergency planning and emergency action."

"It is important that written descriptions of activities, manufacturing processes, engineering designs, and vital legal documents and accounting records be preserved and available to management after an attack," Mr. Couch warned. "One firm has described the disabling results of a loss of vital records as 'corporate amnesia.' Records protection is one of the easiest concrete precautions a company can take, and might well be among the first steps in disaster planning."

THIS HUNGRY MACHINE EATS SECRETS



Shredmaster. Bantam-10 Devours Confidential Papers And Obsolete Records Right In Your Own Office

Are your confidential papers exposed to prying eyes? You, too, can have SHREDMASTER protection when disposing of confidential papers and obsolete records. The Bantam-10 SHREDMASTER assures security for your company by turning obsolete records into unreadable shreds in a matter of seconds. Makes destruction of records a simple routine. Learn how security-minded companies, banks and government agencies safeguard their confidential papers and obsolete records with SHREDMASTER.

FREE 10-DAY TRIAL. New illustrated folder describes unique Bantam-10,

Portable, quiet, clean, the Bantam-10 is the only paper shredding machine designed for office use.

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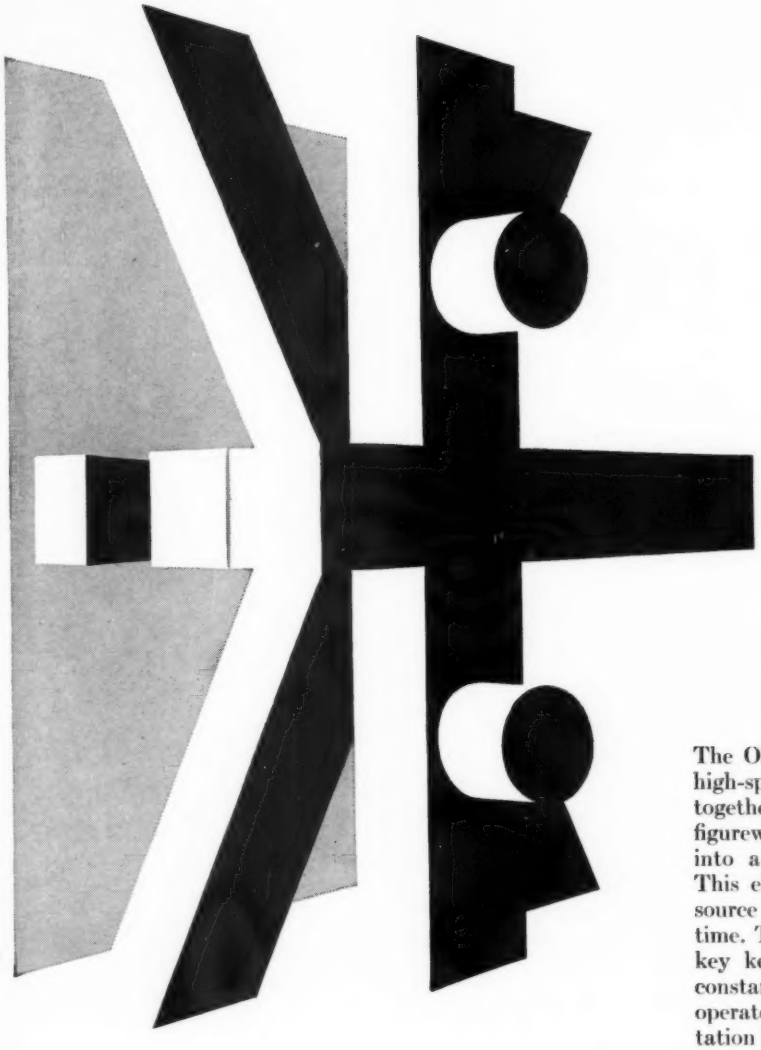
Manufacturers also of the Clipper-14, only heavier duty shredding machine suitable for office use.

Sales and Service in all principal cities in U. S. and Canada



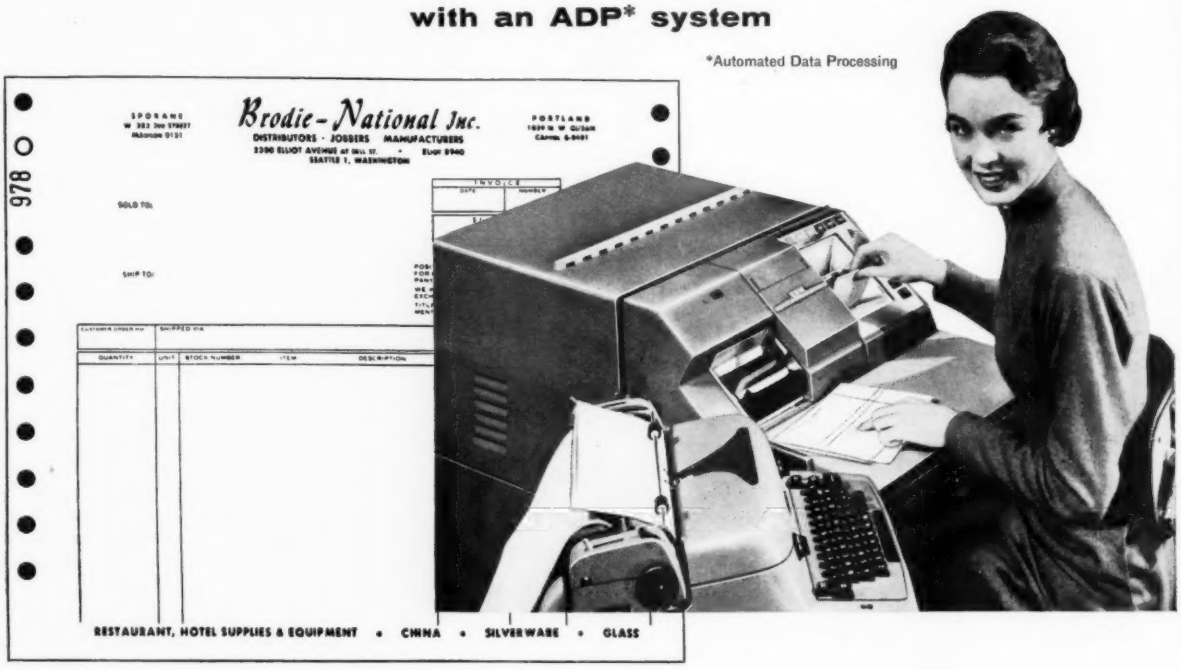
The Olivetti Divisumma 24 is a new high-speed automatic calculator. It fits together the separate parts of a business figurework problem, combining them into a single continuing calculation. This eliminates re-entries, a frequent source of error, and saves considerable time. The machine, with its single 10-key keyboard and unique automatic constant and memory, is quite easy to operate. And, since no business computation is complete until it's on paper, it prints the full record of all calculations. For a demonstration, write Olivetti Corporation of America, 580 Fifth Avenue, New York 36, N. Y.

olivetti

HERE'S HOW...

Brodie-National controls inventory—eliminates back order problems with an ADP* system

*Automated Data Processing



Stocking 10,000 items and averaging 5000 invoices a month, Brodie-National found its manual system of invoicing and inventory control too costly and inefficient: back orders were mounting, extending and totaling were time-consuming and subject to error, and no measure of a salesman's performance or profit by item was economically feasible. Automated Data Processing brought speedy, accurate invoicing, an instantly available inventory check, and automatic production of all necessary sales and inventory information.

Orders now go directly to the warehouse, a copy to billing department for invoicing. The invoice, a 3-part Moore continuous form, is prepared on an IBM Cardatype 858: the customer's name and address and item description and unit price are all taken from previously prepared punched cards; quantity and price added by the operator. A new item inventory card is automatically produced, showing the new total in stock. The old card is saved. The cards are taken monthly to an IBM Service Bureau, and, in a few hours, give: sales by salesmen, profit margin, department sales, item sales inventory cost, inactive items. This information, plus interim checks of the punched cards, lets Brodie-National keep an adequate inventory without overstocking.

The Moore man, using Moore facilities, helped with scientific design and construction of forms used in the system.

If you would like to read the details of this system in this booklet, write on your Company letterhead to the Moore office nearest you.

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Since 1882 the world's largest manufacturer of business forms and systems. Over 300 offices and factories across U.S., Canada, Mexico, Caribbean and Central America.

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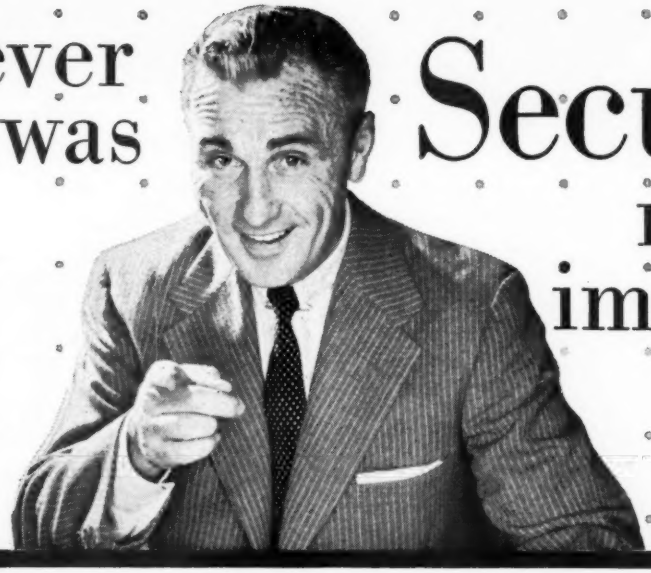
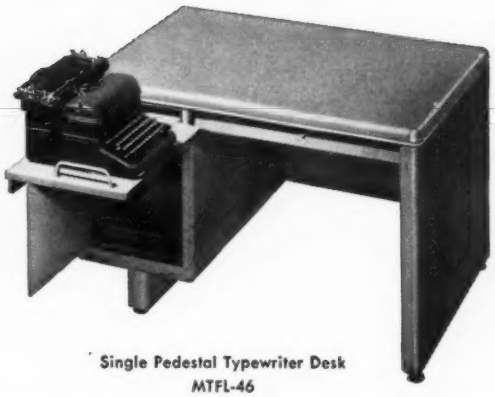
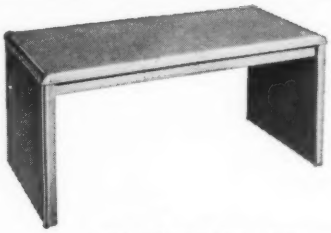
Never was Security more important



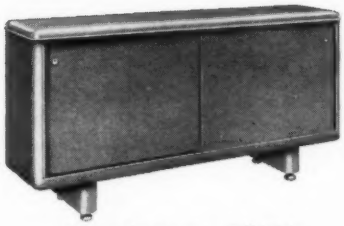
60" Executive Desk
MSF-60



Single Pedestal Typewriter Desk
MTFL-46



60" End Panel Office Table
MOT-60-EP



2 Door Credenza — 59" Wide
MC-59-D

Executive Posture Swivel Chair
No. 105

Executive Guest Chair
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CREATED BY SECURITY STEEL

For Security brings you a new efficiency — an operational saving which is vital under shrinking profits.

There is engineered into every detail of Crestline Steel Office Equipment, an unequalled perfection of line design and finish. You will find that this finest of all office equipment is a sound investment which pays daily dividends. Crestline merits your careful consideration today.

SECURITY STEEL EQUIPMENT CORPORATION, AVENEL, NEW JERSEY

AMA—

(*From page* 30)

together on one sheet or guide chart."

Different methods from those employed in evaluating clerical jobs must be used in evaluating management jobs, Hays pointed out. In routine jobs, specific tasks are performed; in managerial jobs, there are only general objectives to be attained.

The guide chart profile method, he declared, considers jobs as wholes rather than as totals of individual bits and pieces, by measuring "the three primary aspects of all jobs." These he defined as the knowledge the executive must have to perform the job itself; the creativity and judgment required; and the burden of accountability for performance the executive must carry.

The American Management Association's Academy of Advanced Management, was formally opened in ceremonies at Saranac Lake, N. Y. on September 30. Established on the site of the former Trudeau Sanitorium, the new academy was dedicated to "enlightened management philosophy and improved management practices as a service to humanity," by AMA President Lawrence Appley.

Simultaneously with the opening day ceremonies, the Academy "opened for business" as 70 top and middle level executives from all parts of the country attended the first classes of the Academy's first training program, a branch of the AMA's Management Course. In addition, twenty company presidents played the A.M.A. top management "decision game" in a preview of a new course in decision making, which began at the Academy on October 7. (See *Office Management,* June, 1957, page 28.)

Messages received from New York's Governor Harriman and President Eisenhower respectively, predicted the evolution of the center into one of "America's great business landmarks" and lauded the "development of management skills as adding to the strength of the United States."

Don G. Mitchell, chairman of the AMA board, and president of the Sylvania Electric Co., prophesied in his opening day remarks that attendance at the new academy would eventually become a prime requisite for attaining and holding top management positions.

"In the years ahead," he declared, "this Academy will mean to management what the high plane of professionalism means to the field of medicine and law, and the men who aspire to be the great leaders of tomorrow will have to have the Academy as part of their experience."

The greatest impact of the Academy, Mr. Appley said in his opening day talk, will be felt by "thousands who will never see this place, the employees of the companies whose executives will be attending its meetings.

"Managers are the students of the Academy," he continued. "The objective of a manager is to multiply himself through others. How effectively he does this is determined by his personal philosophy, the skill with which he practices his profession, and the personal satisfaction which he derives from helping other people to become better workers, and better citizens."

Although the new Academy will take over many of the traditional AMA courses which have heretofore been given on a periodic basis in other locations, it will also be the scene of several new courses to be launched within the next year. One, for company training directors, will cover methods of training and developing managerial personnel. Another, designed for executives who are called

(*To page* 84)

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Neenah is not ordinary paper and not recommended for ordinary use. It's manufactured by the Neenah Paper Company—specialists in cotton fiber bonds and onionskins . . . and is primarily used by leading printers when they create quality letterheads.

You can use Neenah typewriter papers when your messages must impress, and when your messages must be kept in perfect condition for years. A few recommended uses are—

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- Documents
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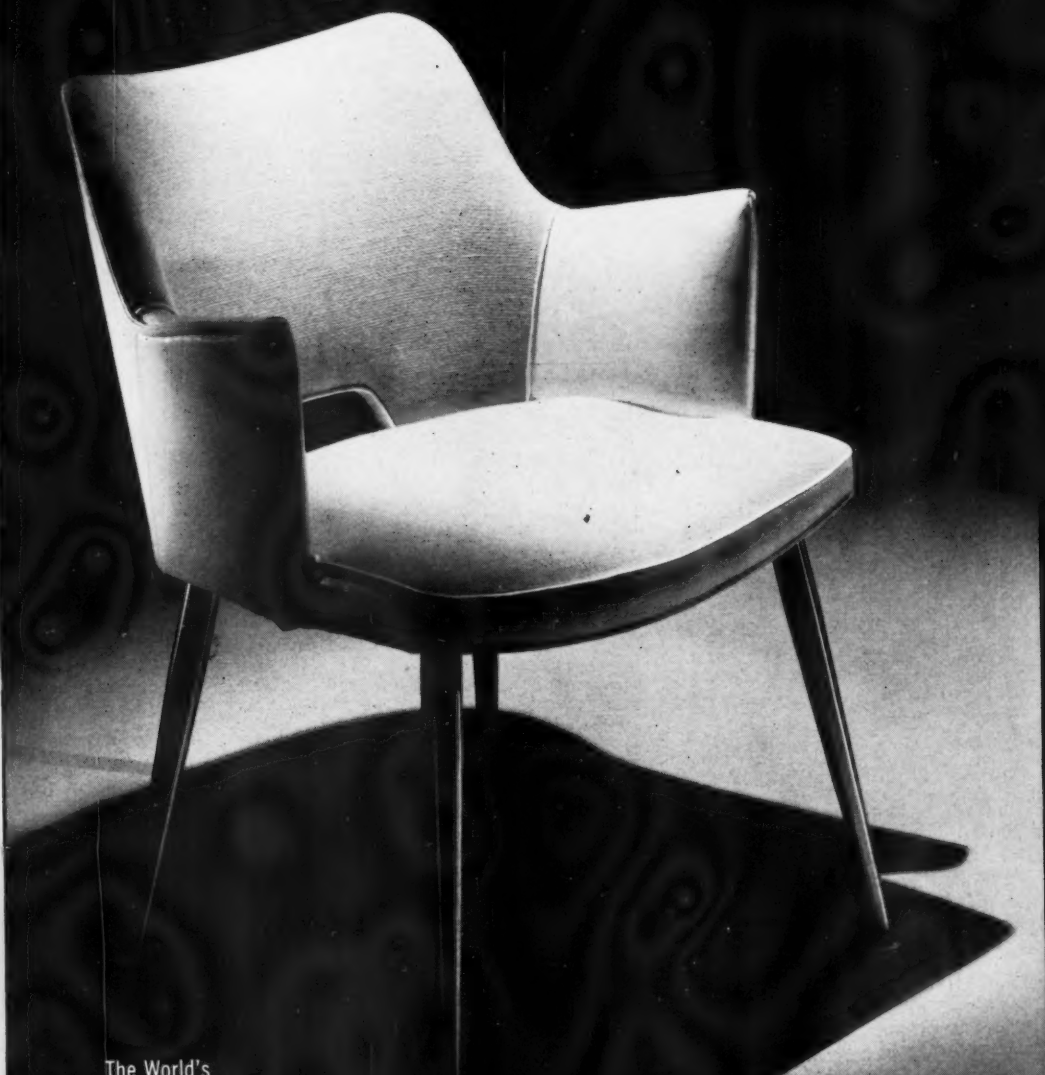

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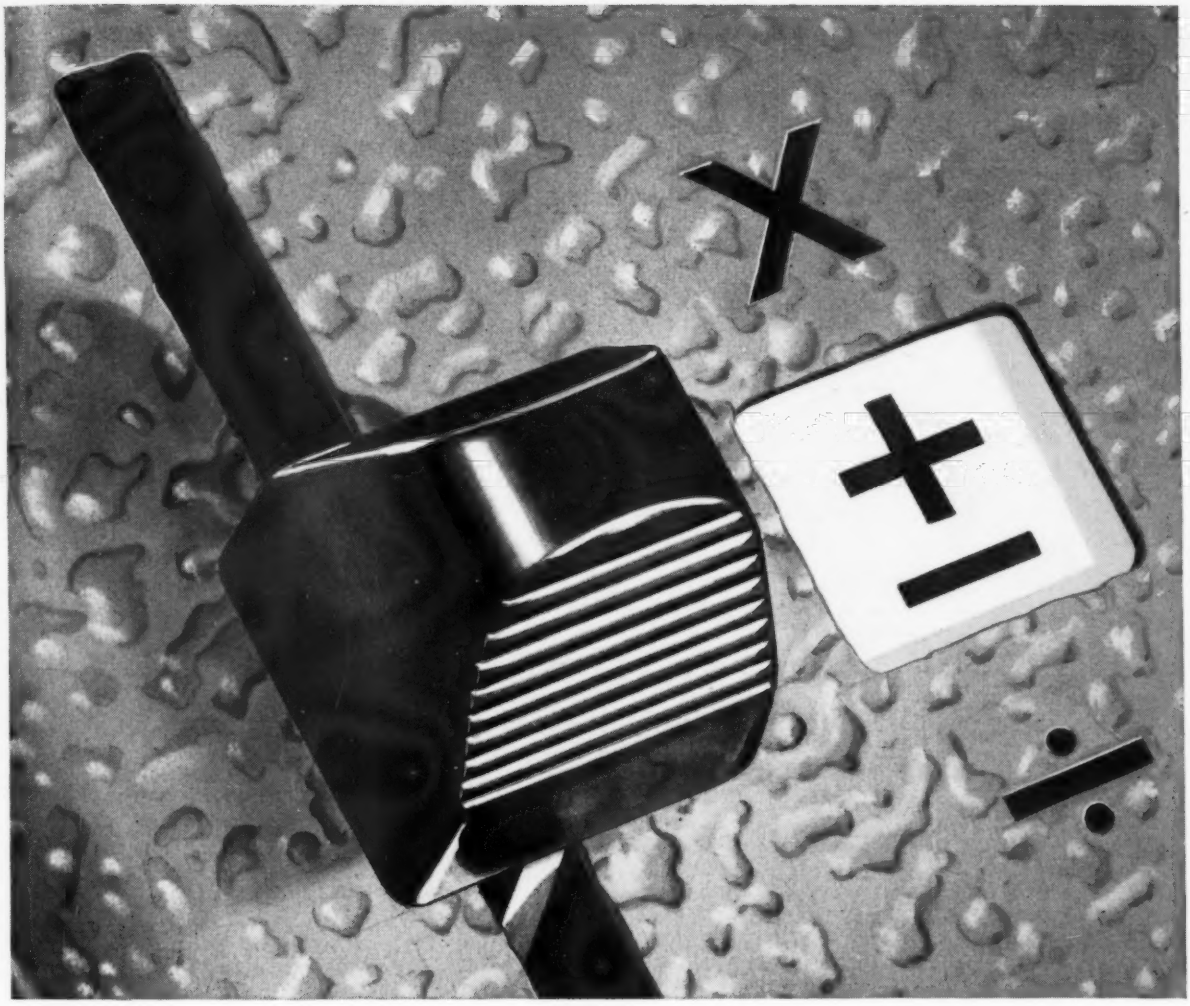

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on for frequent reports, will deal with the principles of oral and visual presentations and the use of specialized communications tools.

Planned for the Academy in the future is an internship program for business executives comparable to medical internship. Executives enrolled in this program would follow a "learn by doing" principle — developing their ability to plan, assign, supervise, appraise, and improve work and motivate people by practicing these skills in actual simulated working conditions under supervision.

Communications, personnel, paperwork control, automatic reporting procedures, electronic applications, and office planning functions were among the subjects covered at the AMA's annual Fall Office Management Conference, held at New York's Sheraton Astor Hotel, October 23 - 25.

Paperwork quality control must be achieved at the individual employee level, and it must be achieved by letting the employee know exactly how well she is doing in terms of the company's standards, Budd Sills, vice president and general manager, Spiegel, Inc., Chicago, Ill., told the opening day audience at the Office Management Conference.

His firm, which is the third largest mail order company in the country, has about 7500 employees in its headquarters in Chicago, and in 1500 catalog centers across the country, he said. Of these, over half are engaged in clerical activities involving "order processing, billing, sales promotion, credit and collections, correspondence and maintenance of stock records. Spiegel has succeeded in subjecting almost all of these operations to its quality control system, he declared.

"In undertaking a clerical quality control program — which will work — careful consideration should be given to the means by which the results of such a program can be properly evaluated," he warned. "It is only through such means that we may get reasonably accurate answers to the all-important questions:

"Where have we been?

"How do we stand?

"Where are we going?"

Management should first of all clarify the nature of effective controls at the employee level, he said, pointing out that the many techniques used to make employees conscious of the need for effective control do not themselves constitute control.

"The best they can do is establish a climate in which controls become better understood," he asserted,

"What, then, does constitute control at the employee level?" he questioned. "I believe you have controls firmly established when the employee knows in quantitative terms:

"The specific nature and number of errors she is making.

"Her current quality ranking and her trend over the recent past.

"Her performance in relation to the expectations of her supervisor as indicate by established standards.

"The manner in which this performance affects her pay, and her opportunities for advancement."

The simplest form of error control, Sills declared, is to inspect random samples of the employee's complete work, and refer each error found back to the operator. Spiegel accomplishes this through error control clerks, who fill out error slips for each mistake found in a sample, attaching the slip with its description of the error to the sample for return to the operator. Both slip and sample are given to the employee's supervisor, who relays it to the employee. The employee corrects the error, signs the error slip, and returns it to the supervisor, who enters it in the individual employee's ployee's quality file.

The critical point in the Speigel system, according to Sill, is the manner in which the supervisor reviews with the individual employe the er-

(*To page 87*)

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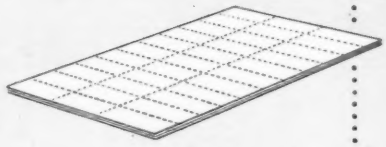

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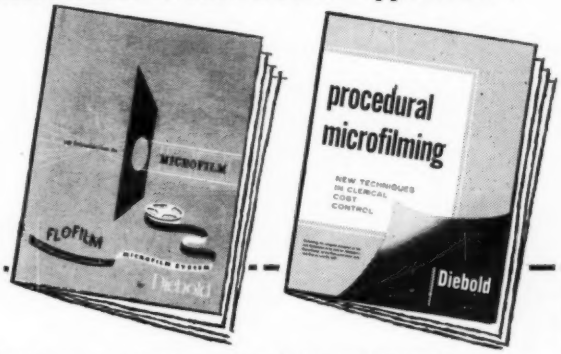

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ror made. This can do more to influence quality control than anything else, since it affects the employee's entire attitude toward the subject of quality control.

"Each error calls for the proper admixture of education and admonition, the successful dispensing of which is a test of the supervisor's skill," he continued. "Low level supervisors need constant coaching on this point."

At Spiegel, each worker is also provided with a weekly summary of her "quality record," supported whenever possible with carbons of the error slips accumulated during the week. The summary includes the number of units checked, the errors found, the error percentage, and how that percentage compares with the standards established for the particular job the worker does.

The company breaks standards down into five performance levels: Excellent, Noticeably Satisfactory, Acceptable, Probationary, and Unacceptable.

"In order to evaluate intelligently the error trend of a clerk from week to week or to make valid comparisons between different clerks on the same activities, it is necessary that errors be evaluated and weighted according to their relative seriousness in preparing any computations of individual percentages," he pointed out. "This evaluation is not difficult, and its adoption is vital to the success of any error reduction program, so that the employee will realize that management's attitude toward accuracy is realistic and responsible instead of uncompromising and arbitrary."

Errors weighed for effect

To accomplish this, Spiegel classifies errors into two categories:

1. Major errors are defined as those which are of the type that could affect the customer adversely.

2. Minor errors are defined as those which tend to increase house operating expenses, delay work unnecessarily, or invite future errors.

Standards are, of course, essential to a quality control program, but when Spiegel first began working with quality control it knew of no "really scientific" approach to the problem of determining satisfactory company standards. It therefore tailored its own system.

"To begin with," Sills recalled, "we asked only three things of our standards:

"1. That they be attainable.

"2. That they be fair and equally requiring on jobs of comparable difficulty.

"3. That they reflect an improvement over the then current levels of quality, with which we were dissatisfied."

The company finally concluded that the two main criteria for determining what standards should be on any given job were the relative importance of error on that job, and the opportunity for error on the job.

All jobs were then classified into three groups according to the seriousness of the typical errors which might be made on each job, and into four numbered categories according to the relative opportunity for error in relation to the difficulty and complexity of the job.

"We then discovered that we had the need for twelve quality ranges, according to twelve group classifications, as A1, A2, A3, etc." Sills continued. "To determine the limits of these ranges, we selected key jobs to use as benchmarks. These jobs were in a variety of the above classifications,

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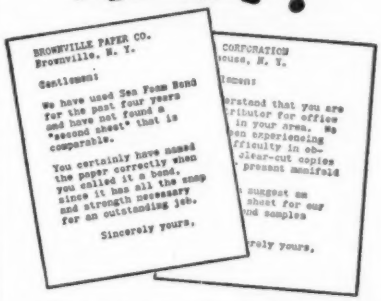
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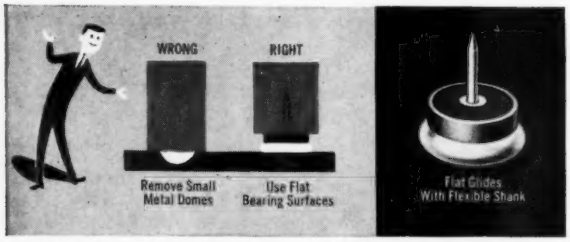
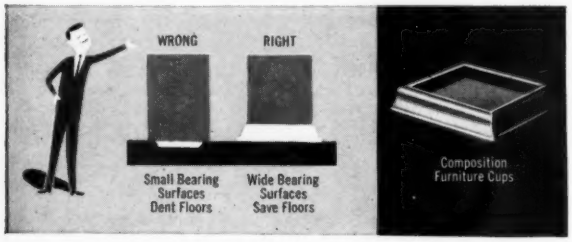


"for lightweight furniture—Use glides having a smooth, flat base with rounded edges and a flexible pin to maintain flat contact with the floor, after first removing any small metal domes on the furniture legs.



"for heavy furniture—For tables and heavy furniture not frequently moved, use composition furniture cups designed to prevent the legs from cutting the floor.

"for moveable furniture—For desk chairs and other moveable furniture, use easy swivelling ball bearing casters with 2" diameter wheels and with soft rubber composition treads at least ¾" wide."

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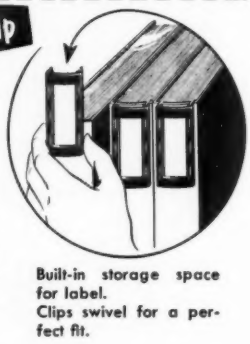

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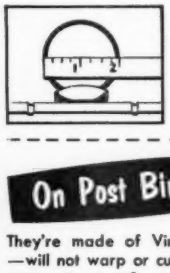

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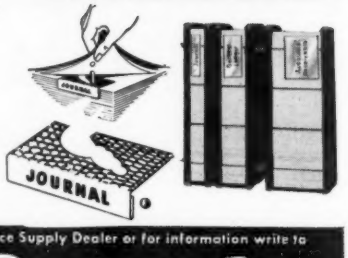

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and were chosen because there were fairly large groups of employees engaged in the activities, there were historical quality data available for the activities, and the activities had been well supervised in the recent past by quality-conscious executives."

A range of accuracy was selected for each "benchmark" job after analysis of all available data, and these ranges were then inserted in the Table of Standards for the particular classification given each such job. Missing accuracy ranges were then completed in the Table of Standards by interpolation, care being taken that the allowable error percentages increased as the table was read from A to C, and from 1 to 4 within each classification.

Although his company does not maintain that this was a perfect approach, it worked, Sills declared. Some changes had to be made subsequently, because some jobs couldn't be fitted into the standards established, and because typing jobs, with their high error potential made specially designed standards necessary.

"For the most part, jobs are still in their original classifications after nearly ten years," he said, "and quality classifications are assigned to new jobs by our Wage Committee at the time the new job's description is evaluated.

Workers are interested in keeping quality standards high because their quality record plays a leading role in both the Speigel merit rating system, and in production bonus pay, Sill declared.

(*To be concluded*)

Workers—

(*From page 27*)

please and frequently more mature in dealing with others. Their emotional stresses are undoubtedly different from those of recent graduates, but not always more. The company of those with like interests helps, but we prefer a balanced group—some older, some younger."

Again referring to his own firm's experiences, Mr. Dougan said that careful selection and thorough and continuous training of the supervisory staff well might preclude friction between youth and age. His firm, he reported, has had success with young supervisors of older workers.

"But I have no figures which indicate how a workforce should be divided by age groups, except to say that a balanced group is favorable. Apart from requirements of specific jobs, I believe that a range of age tends to reduce cliquishness and contribute to morale."

Older workers—pro and con

The usual reasons upheld for refusal to consider hiring older workers, it was said are four-fold: "(1) Loss of adaptability or decline in learning ability; (2) not as active physically; (3) suspicion as to why the individual is on the market, and (4) adverse effect on a company's pension plan."

Opposed to these fears, four advantages were assigned to hiring older workers:

"Greater stability of performance; less turnover for marriage and maternity; more incentive, and more compelling reasons for working, and previous experience."

Concerning absentee records, he stated that most studies "show more frequent long absences, but a great deal fewer short, unpredictable absences. The older workers tend to be more conscientious in this respect."

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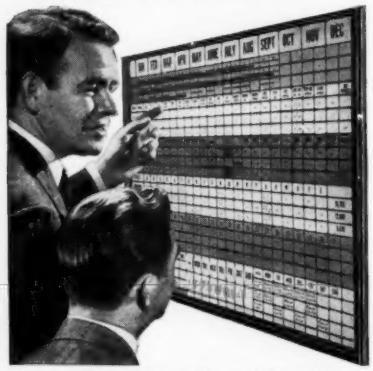

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Apart from these four major sources of potential personnel, Mr. Roche also recommended use of "minority workers"—those persons whose race or color is in a minority in certain localities. In most instances, he said, the language barrier will present a problem, but many companies teach the English language in the plant or office, thereby affording these persons with the basic tool they need for advancement.

"Automation likewise will prove of value to the short-staffed office, especially when considering the availability of labor on a long-term basis. Without increased use of the new automated systems and machinery, authorities have predicted that the offices of 1975 will be in far worse shape than those of 1957.

"Most companies are now acutely aware that their personnel problems, unless faced now, may well prove their biggest headaches in the future. Now is the time to study personnel policies—especially as regarding the hiring of handicapped or older workers—and remove any iron-clad restrictions which today's labor picture dictates be lifted."

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SPA—

(*From page 37*)

cess of looking for patterns of relationships in the information that has been gathered in the preceding element. These patterns of relationship are summarized by the model—a technical hypothesis expressed in symbol form.

"To build symbol models usually requires an engineering or scientific background. That is, a person must have had technical training to express or represent in symbol form the relationships present in the gathered data.

"The fifth element in operations research is to test the model. This testing seeks to answer the question, are the characteristics of the model sufficiently accurate to represent adequately the characteristics of the situation being investigated? It frequently occurs that the results of the testing do not meet the objectives sufficiently well, that a revision of the model must be made, and the revised model tested.

"The sixth element in operations research is to test the system. The starting point for the design of the system is the tested model. In designing the system, it is necessary to provide for flows of information which can be interpreted by management to determine when a change in the company operations is needed to meet the objectives on a continuing basis.

"The seventh element in operations research is to install the system.

"The eighth element in operations research is to follow up."

At first glance, the speaker continued, there does not seem to be too much similarity between the basic elements of operations research and systems analysis. But closer investigation does reveal some basic similarities.

"The greatest amount of difference between operations research and systems analysis appears to be in building and testing the model," he stated. "The building and testing of the model are functionally equivalent to the analysis step in systems analysis. The difference arises because in operations research much greater stress is given to the analysis of the data."

Thus, it would seem that both operations research and systems analysis may be used to design and install a business system, posing the important question of when operations research

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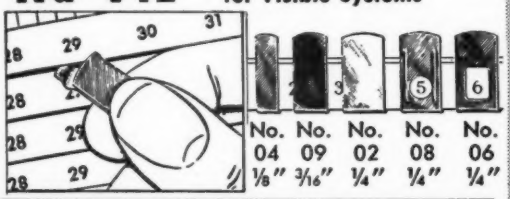

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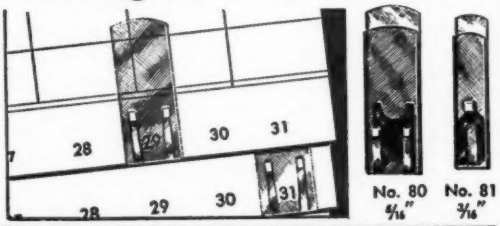

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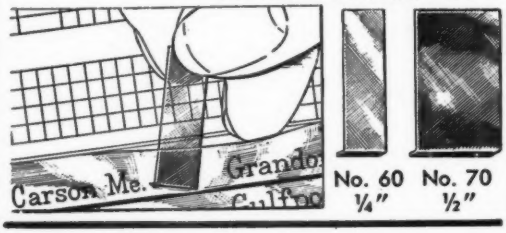

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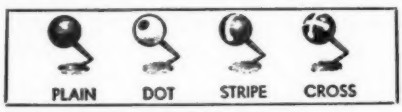

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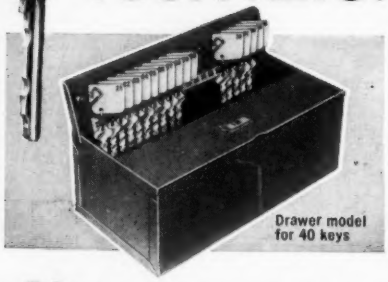

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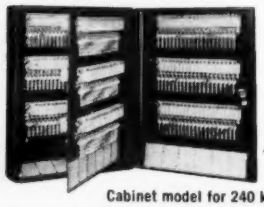

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is a more desirable approach than systems analysis, he said.

"The general answer to this question can be given in the following terms," he went on. "In some situations the traditional analysis techniques available to systems analysts are not adequate to design a system sufficiently improved to satisfactorily meet the objectives, but in many of these situations, the techniques available to operations research workers can make possible the design of a system capable of meeting these objectives. Because the use of the more technical techniques requires more extensive and more highly skilled effort, the cost of operations research is often more than the cost of systems analysis. This correctly suggests that when systems analysis can design and install a system capable of meeting the objectives adequately, then systems analysis should be used instead of operations research. But when systems analysis cannot do the job, operations research may be required to design and install an adequate system." (*To be concluded*)

Automation—

(*From page* 38)

mation used in integrated data processing systems, such as the sending of orders from office to distant factories, and has the ability to transmit a greater number of code combinations, as well as to check the accuracy of transmission, over any commercial telegraph channel. Such other channels of communication as telephone circuits and micro-wave systems also can be used.

The machines include a tape reader and punch. The reader is in operation when sending or transmitting information; the punch operates when receiving information. As data in punched tape is transmitted through the reader of the machine, it is re-perforated simultaneously and checked on the punch of the Teledata, placed at a distant location. Similarly, as information is transmitted from a distant point, the unit punches and checks an identical tape. The tapes then are used to actuate other equipment to produce, automatically, such documents as sales orders, invoices and production orders, or tabulating cards for statistical reports.

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ing each Teledata to transmit information at the same time, and the half-duplex connection, with which data may be transmitted in either direction, but in only one direction at a time.

Presentations—

(*From page* 32)

are obviously not overwhelmingly large, and yet can't be measured. Such scepticism will prejudice the reception of the rest of the proposal.

If the benefits are real, it is almost always possible to quote examples of the types of savings expected, even if an overall figure is not to be had without excessive research.

The cash side of the proposal will have to be presented in written form, unless it is the very simplest kind of proposition. This brings us to our second angle: the method of presenting the plan.

In some organizations there may be no choice: recommendations may have to be presented in writing. This is not the place to comment on the usual structure of such a presentation: summary of highlights; exposition; discussion of advantages and disadvantages; conclusions and recommendations for implementation. But perhaps we should look at some points about written as against verbal reports, and about making each as palatable as possible.

This last consideration may seem something of a luxury — but nobody, not even the exceptional people who have reached management status, can avoid being influenced consciously or subconsciously by general impressions and personal tastes. Masses of text, unbroken by tables (or charts if the designated reader prefers them — the author's tastes don't count) will repel most readers so it is well worth the time to include such illustrations. . . . If it is worth the time to make the plan, it is worth doing everything possible to gain acceptance, and the reader has enough problems without the added one of having to "dig" for information in a presentation supposed to serve it up for him conveniently.

Incidentally, the same consideration applies to a verbal presentation: masses of explanation fired off without a change of pace are hard to digest. Just because the information is being

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given by word of mouth, there is no need to depend solely on the receiver's sense of hearing. Taking a few charts or tables along helps to avoid monotony, and pays a nice compliment by showing that one thought it was worth taking some trouble.

Where forms are involved, too, samples should be available, even if they may never be studied. Nothing is more trying than having to attempt to describe the wretched thing, let alone visualize it from a description or from the author's frantic scribbling on scratch paper.

Once again, unless company policy prescribes it, the choice of written as against verbal presentation depends on the recipient's taste — definitely not on that of the person offering the plan. It may be an effort to write, but if that is what the man likes, that is what he is usually entitled to. In any case, it would be asking for trouble to try a verbal presentation that had not been at least as carefully thought out as a written report, so the extra effort should not be much, compared to the risk of having the request refused.

The advantages of a written report are fairly obvious. The person who receives it can read it when he has proper time, and so is more likely to be receptive. He cannot interrupt the flow of the reasoning by questions and resulting discussion. The wording and construction can be worked out at leisure, and so can be shorter and more to the point than in most verbal accounts. To give the same precise detail in a verbal explanation that one can give on paper, one would practically have to read off a lecture. That is hardly an approach likely to encourage a receptive frame of mind in the middle of a business day.

On the other hand, short of asking questions oneself, there is no way of knowing just how far a written report has got a certain point across. In a verbal presentation, questions and answers will afford the opportunity to amplify the points where more detail is needed, and to try to counter the hearer's objections before they have time to accumulate.

Perhaps the ideal way is to present a concise written statement that raises all the major issues, with the understanding that if it is not acceptable as presented, there will be an opportunity to offer futher details at

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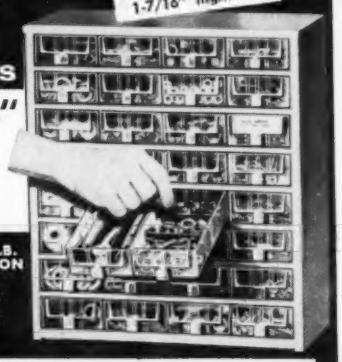

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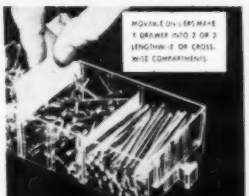

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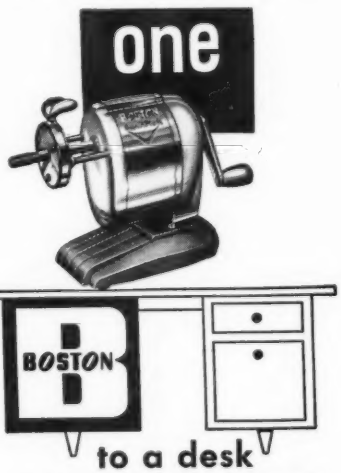

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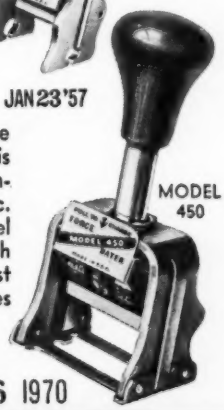

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a subsequent meeting. Typing is an expensive affair, and this keeps it to a minimum.

In this last event, it is more than ever vital to prepare the oral presentation just as thoroughly as if it were going to be a written report. The fact that it is not going to be on paper is no reason for not planning the sequence of information carefully, and having notes on the facts and figures. On the contrary, the informal approach makes it all the more important to marshal the argument with care and have all the data at one's finger-tips, even to the extent of noting the key ideas and data on a card and taking it in to the meeting. Some managers might object, but most will appreciate the consideration shown to them: "I noted the main points down, to be sure to take as little as possible of your time".

A preliminary discussion with someone else helps to anticipate the questions likely to strike the executive himself — and forewarned is forearmed.

If he approves the plan, and assuming it works, he will be all the more likely to approve the next one if he has been getting progress reports. If he knows how things are going, and knows he won't have to worry about following them up himself, there are automatically two less reasons why he should hesitate to give the go-ahead for further plans.

Finally, having done all this, if the answer to most of the plans put forward is still "No," either the executive or the planner is a square peg in a round hole. It should not be too difficult a research problem to discover which it is—but this is one piece of data on which accuracy is very important indeed.

NOMA—

(*From page* 34)

Space Requirements: Good (human); poor (machine).

Cost (on redundant work): Poor (human); good (machine).

"Thus," Mr. Abbott concluded, "the machine is tops in response, reliability and cost—the very reasons why we would wish to have machines, to a degree, replace the human."

Speaking of EDP, he warned against "purchasing useless, 'sophisticated' hardware unless you know for what purposes you plan [it]. But if you feel you need EDP, go out and look into it now; don't wait around."

In "Is Automation for You?", delivered by Neal J. Dean, section head of the Data Processing Consulting Section, The Ramo-Wooldridge Corp., Los Angeles, the speaker, using charts and slides, asserted that "management's attitude toward EDP is four-fold: (1) Do nothing; (2) Often ,management will use punched cards, thereby gradually moving into real EDP. This is deceptively attractive but illusory, since bottlenecks occuring in overall areas under the punched card formula simply move into other areas and little is, or can be accomplished; (3) A computer is placed on order before a system for it is designed; and this idea of fit-the-system-to-the-work may apply in certain simple operations, but may easily turn into a fiasco; (4) Conduct a study of the system and be guided accordingly."

That the last attitude is the wisest was made clear by Mr. Dean, who discussed the four objectives in a prior-installation feasibility study to determine company needs and restrictions. These objectives are:

"Priority—which application should go on the proposed new machine first;

"Integration—to relate source documents and output reports to tighten processing routines and schedules;

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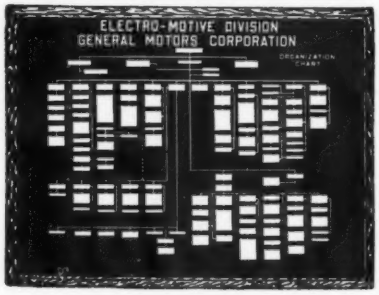

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"Economic—study of the operational cost element, or, in other words, which machine best fits a firm's requirements; and

"Educational—to undertake careful reading in technical and academic literature to discern all areas to be encompassed by automation in a specific office."

Final speaker of the first day's session was R. D. Joy, assistant treasurer, Middle Atlantic Transportation Co., Inc., New Britain, Conn., who presented an IDP case history involving his own firm. Noting that Middle Atlantic wished to reduce clerical costs, Mr. Joy said that his firm equated what it would spend with what it would receive for that expenditure—"an important first step in any firm's automation studies."

Prior to installation of its IDP system, Middle Atlantic processed about 3 to 4,000 freight bill forms each day. A need for more rapid accounting and communication arose, and in 1954 the company decided to investigate automation. This study required 18 months, and IDP was installed in January 1956. A switching center, necessary to handle the company's expanded leased-wire circuits (which increased from one to nine), was set up at the New Britain office.

Benefits which the company has received from the system, Mr. Joy continued, include reduction in operating costs; elimination of manifold forms preparation; higher degree of accuracy; more prompt auditing; savings in clerical operation; reductions in postage and telephone calls (since bills now are transmitted over the leased-wire circuit); and gains in preparation of sales reports and similar information to management.

"We have, in these accounting gains alone, covered the cost of our installation," he stated. "If we measure fully the gains which IDP has brought us, as opposed to our previous methods, we would add these, although, admittedly, they may be difficult to measure in terms of actual dollar savings:

"A sharp reduction in the former waiting periods of drivers, since the relaying time of freight bills is cut; reduction in the frantic pressure in preparing freight bills; these bills now are in terminals at least one day before the trucks arrive; and customer relations are greatly improved.

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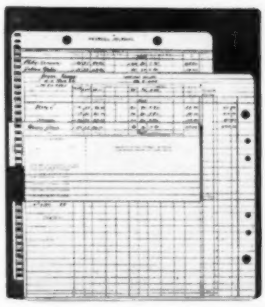

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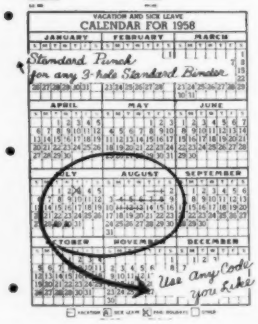
VACATION and SICK LEAVE CONTROL SHEETS



These control sheets give an accurate, readily accessible, and economical record of employee's annual vacation, sick leave, paid holidays, and other records requiring tabulation by calendar days. Over 150,000 sold this year.

1958 VACATION AND SICK LEAVE CALENDAR SHEETS

25 sheets	$2.00	300 sheets	$12.00
50 sheets	$3.00	400 sheets	$14.00
100 sheets	$5.00	500 sheets	$15.00
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Additional sheets over and above 500 . . . 1½c each

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Postage Prepaid if check or money order accompanies order.

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uated? The answer, simply, is: How do you value a happy customer and increased employee morale?"

First of five speakers at the closing day's session was Robert Moore, manager, Systems and Automation, General Chemical Div., Allied Chemical and Dye Corp., New York. In describing his firm's successful IDP installation, Mr. Moore said a net savings of $25,000 each year has been realized, and that General Chemical, at this rate, expects to recover its initial costs in four years. The system was covered in detail, showing how, by means of punched tape and cards, information is processed from the point of sales order entry to final shipping and invoicing. Advantages accrued from use of the system include a higher degree of accuracy, considerable reduction in labor turnover, reduction in space required for operations, and increased expansion capacity, since the installation allows for doubling the business volume.

Disadvantages, however, likewise were recounted by Mr. Moore. The noise level of certain machines, he related, was quite high; price changes, such as freight rate increases, are time consuming, particularly if a large number of prices must be changed; initial costs were high; and training time is about three times as long as a typist ordinarily requires to learn her duties. But, he concluded, the advantages outweigh the disadvantages. About six months of study, and an additional three years to complete nationwide installation were required.

Department store tests EDP

C. Fred Flannell discussed the first of two EDP case histories, this one involving Burdine's, Inc., a department store in Miami, Fla., which recently opened its sixth store for use as a "pilot" for EDP study and installation. Mr. Flannell, who is director of the Electronic Computer Dept., Royal McBee Corp., Port Chester, N. Y., covered in particular the store's use of the Royal McBee LGP-30 computer in handling its daily average of 3,000 transactions. He detailed Burdine's point-of-sale recording devices, which print a paper tape for later processing by the LGP, to obtain necessary information from the sales floor.

Whereas Mr. Flannell's case history involved a small EDP installation, the succeeding speaker, R. D. Builter, assistant controller, Columbia Records,

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ELECTRONIC CHECKS also available on Litho-sets . . . requires no change in your present method of preparing checks.

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Div., Columbia Broadcasting System, Bridgeport, Conn., outlined a large installation undertaken recently by his company primarily to initiate an inventory control system. At present the company's Data Processing Department performs such diverse duties as preparing order-billing-shipment records, daily and weekly inventory reports, weekly invoices and royalty reports, payroll, quarterly 941 Social Security reports, annual W2 Federal tax statements, U. S. Savings Bond purchase instructions, weekly invoices and credits to all customers, sales analysis by customer and merchandise codes, personnel records as a by-product of payroll, 4,300 dealer accounts receivable, dealer monthly purchase summaries, branch sales statistics, and salesmen commission reports. These myriad functions all have been coordinated with the IBM 650.

The closing conference speaker, Everett S. Calhoun, coordinator, Office Automation Research, Stanford Research Institute, Menlo Park, Calif., entered into his discussion by declaring that there exists "little doubt that the office of tomorrow will be vastly different from yesterday's; we are in a period of transition."

Tomorrow's office, he added in his speech, "What's Coming Tomorrow," will be governed by economics and a lack of experience in research, manufacturing and application. Calling up references to many new systems and machines in the planning or production stages throughout the world, he described what these machines may be expected to accomplish and by what methods.

"I'm not sure that management wants automation," he declared, "but it does like the glamor of electronics and likes to have something to talk over at the club or on the golf course. Thus, a machine *must* be on order."

Computers will be improved constantly in the future, he declared, but speed is not a critical area any longer. He indicated the growing need to eliminate error at the input stage, by making input electronically prepared, or, preferentially, prepared by the same system which later will process the input material.

"But," he warned, "the apparent market at this time would not justify completion of many of the projects I have referred to. The reason is prohibitive cost. All businesses do not need computers, and only the big firms, with a wide variety of problems, can really afford them.

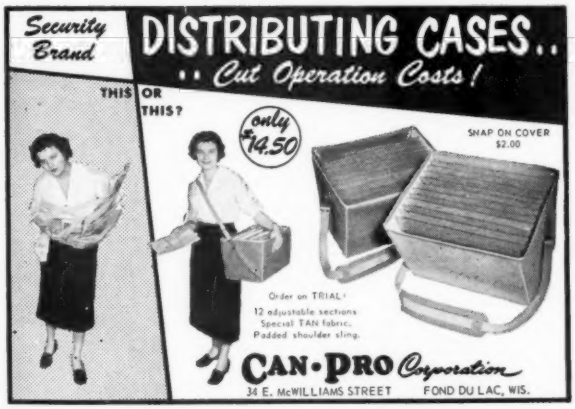
"As it is, research indicates that only about half of the computers in the U. S. are being used for processing business data—the other half are used for solving research problems of a scientific nature. Of the former, 53 per cent are being used largely for payroll and inventory analysis."

In prompting business executives to educate themselves, as well as their employees, and to design systems procedures clearly to enhance the success of installations, Mr. Calhoun concluded:

"The Electronics Age in the office has only begun. As need arises, and as we all learn how to work with what we have, more systems will be developed, so that in time we may have to work in the office only during the coffee break!"

Another speaker was Anthony A. Ibanez, Ernst & Ernst, who conducted a Workshop Session in solving a space control problem.

The conference closed with a NOMA-produced film, "Integrated Data Processing," written and narrated by R. A. Scudder, a conference speaker.



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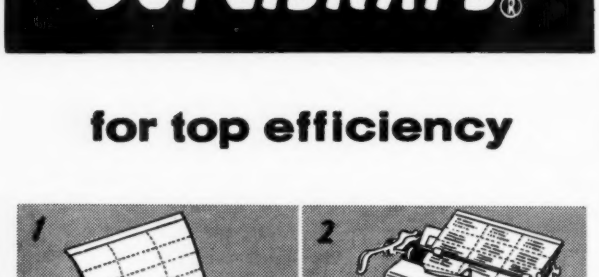

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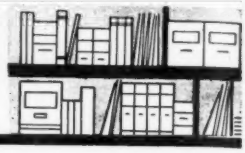
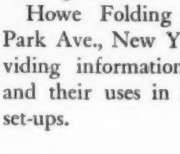
CATALOGS
BOOKLETS, BROCHURES FOR THE OFFICE



Folding Tables

Howe Folding Furniture, Inc., 1 Park Ave., New York 16. Folder providing information on folding tables and their uses in multi-purpose room set-ups. **(1)**

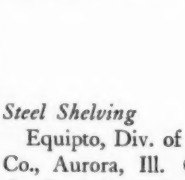


Automatic Data Processing

John Diebold & Associates, Inc., 40 Wall St., New York 5. Booklet, *Automatic Data Processing,* outlining in 14 pages the steps that should be taken in installing automatic data processing systems in business. **(2)**

Steel Shelving

Equipto, Div. of Aurora Equipment Co., Aurora, Ill. Catalog illustrating the firm's line of steel shelving. **(3)**



Office Chairs

Cramer Posture Chair Co., Inc., 1205 Charlotte, Kansas City 6, Mo. Booklet, *How to Choose Office Chairs,* on Cramer's series of office chairs. **(4)**

Mailroom Equipment

Pitney-Bowes, Inc., Walnut & Pacific Sts., Stamford, Conn. Twelve-page booklet, *Some Eye-Opening Facts I Found Out About Parcel Post,* outlining proper parcel post procedures and various mailroom equipment. **(5)**

Branch Office Plan

National Branch Offices, 2329 W. Wells, Milwaukee, Wis. Brochure indicating methods to save 65 to 75 per cent on branch office program costs. **(6)**

Lettering Styles

Filmotype Corp., 7500 McCormick Blvd., Skokie, Ill. New 36-page guide book, *A Selection Guide on Lettering Styles,* describing Filmotype's 100 new styles, in addition to its regular lettering fonts. **(7)**

For further information, use Reader Inquiry Card on page 102.

CLASSIFIED ADVERTISING

Rates are 20c a word. Minimum charge $4.00. Payable in advance. Address replies to all Box Number ads c/o OFFICE MANAGEMENT, 212 Fifth Ave., New York 10, N. Y.

For Sale or To Buy

WANTED TO BUY (and for sale) NCR 31, 32, and 2,000 class models, NCR Cash Registers, Underwood Model E, Burroughs Sensimatics and Class 7 Multiplying Models, Graphtypers, Addressographs, Calculators. Send complete description and best cash price. Al Steen, 324 No. Vermont, Los Angeles 4, Calif.

WANTED ALL TYPE OFFICE Machines, Filing Equipment, Office Furniture, Kardex, Acme Post Index. Will exceed a manufacturers' trade-in allowance. Write. Wire. National Office Equipment Co., 429 Broome St., New York, N. Y.

OFFICE MACHINE SALES & Service, Miami, Fla. Gross $50,000! A-1 equipment. Also brokers contr. print. Top accounts! $27,500. Dept. ♯8499, Business Mart of America, 6425 Hollywood, Los Angeles 28, Calif.

BUSINESS SERVICE CALIFORNIA. Steno. & Trans. Established accounts. Growing opportunity. Court house location. Good parking. Dept. ♯B24467 Business Mart of America, 6425 Hollywood, Los Angeles 28, Calif.

STATIONERY STORE. SOUTHWEST CONN. Price $11,000, net profit $7,000 year. Good shopping center location. Parking. Free and clear. Dept. B-42703, Business Mart of America, 6425 Hollywood, Los Angeles 28, Calif.

WINDOW CLEANING & JANITOR Service, Central Illinois. Established 1917. Large clientele. Excellent equipment. 24 hours service. Gross sales $79,078. Ask $55,000 cash. Unlimited potential. Details on request. Dept. ♯B-62285, Business Mart of America, 6425 Hollywood, Los Angeles, Calif.

WILL BUY AND SELL—All makes calculators, adding machines, bookkeeping machines and other office machinery. Give us full specifications and serial numbers—model number if possible. We'll quote highest prices. International Office Appliances Inc., 326 Broadway, New York.

HIGHEST PRICES PAID for used Bookkeeping Machines, all makes, Burroughs, Sensimatics, N.C.R. 3000, 3100, Rems, E. Fisher, Underwood, Brandt Coin Machines. Advise full model and serial numbers for our quotations. L. A. Pearl Co., 140 W. 42nd St., New York 36, N. Y.

WANTED TO BUY: Late model Elliott-Fisher bookkeeping and billing machines. Must be over 300,000 serial number. J & T Office Machine Co., 605 W. Washington St., Chicago 6, Ill.

ELLIOTT-FISHER and Sundstrand Machines. Comptometers, Burroughs, Friden, Marchant, Monroe Calculators, Electromatic Typewriters, Adding Machines and all office machines bought, sold, rented, rebuilt. Tetter-Warsh, 849 No. 3rd St., Milwaukee 8, Wis.

WANTED—SUNDSTRAND and Burroughs Bookkeepers, also Remington, National machines. Indicate details, model, serial. Gibian Business Machines, 128 Lafayette Street, N. Y. 13, N. Y.

ELLIOTT-FISHER MACHINES, Calculating machines, adding machines—all office equipment bought and sold. W. J. Crowley Company, 906-908 No. Water St., Milwaukee 2, Wis.

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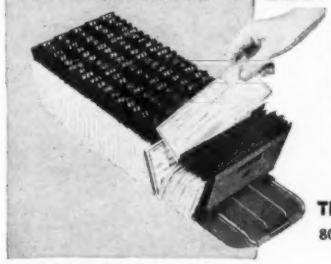

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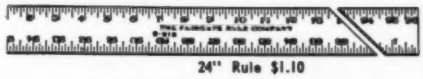
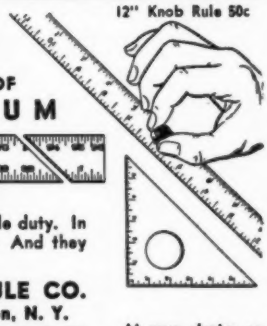


24" Rule $1.10



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Simply circle the respective numbers in coupon below

Just circle the numbers on which you want further information; fill in your name and address below, tear out and mail to Office Management. Our office will forward your inquiries promptly to the companies concerned.

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212 Fifth Avenue, New York 10, N. Y.

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Information on products listed in the Tools of the Office section may be requested by writing in names of manuturers.

Manufacturer	Page No.

Name ..... **Title** .....

Company .....

Address .....

City ..... **Zone** ..... **State** .....

Number of Office Employees (all departments) .....

November 1957 Issue
Office Management

This inquiry form good until December 15, 1957

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editorial

Milestone for management

REPORTED in this issue is the opening of the first "campus" ever to be devoted exclusively to the practice of management—the American Management Association's Academy of Advanced Management at Saranac Lake, N. Y. At first thought, this may seem like an error—surely we have had business schools—and very good ones—at many of our colleges and universities for many years. Yet there seems to us to be a sharp distinction. The business schools have given a business education, of which management was surely a part, but in which it was not necessarily the dominant part. Their aim has been to train men and women in the methods by which business operated, to introduce them to the most important ingredients of the thousand ingredients that constitute the business world.

The new Academy is different. Here management per se is the emphasis—the actual handling of people and situations in such a way as to get the most desirable results. This of course has been the central theme of all the management associations throughout their existence; the significance of Saranac Lake is that the Academy there is the first permanent, concrete facility devoted to management training—a true measure of the evolution of the many tangible and intangible factors that are "management" into a disciplined body of knowledge and practice.

RIGHT IN ANY OFFICE
BY BILL WILLIAMS
I HAD A VERY BLUNT NOTE FROM MR. SALISBURY
BLUNT, EH? WHAT HE NEEDS IS A MIRADO!
HEY, D'JA READ ABOUT THIS BOOKKEEPER WHO VANISHED WITHOUT A TRACE?
SOMEBODY MUSTA RUBBED HIM OUT WITH AN EAGLE ERASER!
SINCE WE SWITCHED TO MIRADO OUR GIRLS SPEND ALMOST NO TIME AT THE SHARPENER!
GETTING AWAY FROM THE OLD GRIND, EH?
MAKE IT FAST, MAGID! TIME IS MONEY!
ANOTHER REASON TO ORDER EAGLE, SIR! PENCILS THAT STAY SHARP SAVE ALL SORTS OF TIME
WHY IS VERITHIN LIKE A NIGHTGOWN?
YOU NEVER WEAR IT OUT!
MEREDITH, I DON'T THINK YOU'RE BEARING DOWN AROUND HERE
THAT'S JUST IT, SIR! WITH A MIRADO, YOU DON'T HAVE TO BEAR DOWN!
SOME LINE!
YES, MA'AM! EAGLE HAS A COMPLETE LINE!
EAGLE IS THE CAT'S MEOW!
NO MATTER HOW YOU FIGURE...
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